Hunter Water Corporation

Belmont Drought Response Desalination Plant Design

Detailed Site Investigation

October 2020

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List of abbreviations

Abbreviation	Definition
ANZECC	Australian and New Zealand Environmental Conservation Council
ACM	Asbestos Containing Material
ALS	Australian Laboratory Services
ASS	Acid Sulfate Soil
bgl	below ground level
BaP	Benzo(a)pyrene
BTEXN	Benzene, Toluene, Ethyl benzene, Xylenes, Naphthalene
CLM Act	Contaminated Land Management Act 1997(incorporating amendments made by the Contaminated Land Management Amendment Act 2003)
CSMP	Contaminated Soils Management Plan
NSW DEC	Former Department of Environment and Conservation. The DEC was formed on 1 July 2006 from the amalgamation of the Department of Environment and the Department of Conservation and Land Management.
EIA	Environmental Impact Assessment
EIL	Ecological Investigation Level
ESL	Ecological Screening Level
NSW EPA	NSW Environment Protection Authority
Ha	Hectare
HIL	Health Investigation Level (relating to defined land use scenario)
HSL	Health Screening Level
ID	Identification
LOR	Limit of Reporting
m bgl	Metres below ground level
mg/kg	milligrams per kilogram (generally equivalent to parts per million)
mg/L	Milligrams per litre
NATA	National Association of Testing Authorities of Australia
ND	not detected (above laboratory LOR)
NEPC	National Environment Protection Council
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
OCP	Organochlorine Pesticide
PACM	Potential Asbestos Containing Material
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PFAS	Per- and polyfluoroalkyl substances
PID	Photo-Ionisation Detector
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
TEQ	Toxic Equivalency Quotient
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons

1. Introduction

1.1 Background

GHD Pty Ltd (GHD) was commissioned by Hunter Water Corporation (Hunter Water) to undertake a Detailed Site Investigation (DSI) to investigate the Project Area (also referred to as "the Site") of the proposed drought response desalination plant development. The Site is located off Ocean Park Road Belmont, NSW, on the southern portion of Hunter Water owned land and to the south of the current Belmont Wastewater Treatment Works (Belmont WWTW) site and to the east of the Pacific Highway. The location, layout and amended boundary of the Site is presented in Figures 1 and 2, Appendix A.

Like much of NSW, the Lower Hunter region continues to experience ongoing drought conditions. In response to the drought, Hunter Water is rolling out a program of drought response measures as outlined in the 2014 Lower Hunter Water Plan (LHWP). Measures include the staged introduction of water restrictions, implementation of a broad range of water conservation and water loss initiatives as well as various operational measures. The 2014 LHWP identified the implementation of emergency desalination as a measure of last resort in response to a severe drought, and would only be implemented if water storage levels reached a critical point and all other measures have been implemented.

An Environmental Impact Statement (EIS) (GHD, 2019a) was prepared to support a development application for the Project as State Significant Infrastructure (SSI). The EIS was publicly exhibited by DPIE for 28 days from 21 November 2019 to 19 December 2019.

The Project described in the EIS included the construction and operation of a desalination plant, designed to produce up to 15 megalitres per day (ML/day) of potable water, with two sub-surface intake structures.

Since commencing this Project, Hunter Water has begun a major review of the 2014 LHWP, now referred to as the Lower Hunter Water Security Plan (LHWSP). The LHWSP seeks to determine the preferred portfolio of supply and demand side options to ensure a sustainable and resilient supply for the region, over the long term as well as during drought. This work indicates that a drought response portfolio including a desalination plant at Belmont with a nominal production capacity of up to 30 ML/day would provide the best balance of meeting the community's needs should a severe drought occur, while still providing value for money. In addition to the proposed increase in plant capacity, further design development and assessment following completion of the EIS has identified that a direct ocean intake would perform considerably better than a sub-surface option across key criteria including, reliability, efficiency and scalability.

An EIS Amendment Report has been prepared in accordance with the requirements for SSI under Part 5.2 and clause 55 of the *Environmental Planning and Assessment Regulation* 2000 and the revised SEARs. The EIS Amendment report was publicly exhibited by DPIE for 28 days from 10 September to 7 October 2020.

GHD were engaged to prepare a Detailed Site Investigation (DSI) by Hunter Water to respond to a requirement by the Environment Protection Authority (EPA) received in response to the EIS to prepare a DSI prior to commencing any site preparation works. The DSI has been prepared based on results from previous investigations completed by GHD (2019 and 2020) and results of additional sampling undertaken within the northern portion of the Site which had not been previously sampled.

1.2 Key features of the Amended Project

The Amended Project for the construction and operation of a drought response desalination plant, designed to produce up to 30 ML/day of potable water, includes the following key components:

- **Direct ocean intakes** – To ensure provision of sufficient quantities of raw feed water for the water treatment process plant, a direct ocean intake is proposed as part of the Amended Project, as follows:
  - *Sea Water Pump Station (On-shore),* including a central well, screening and pump housing, proposed to be a concrete structure (referred to as a wet well) of approximately nine to 11 m diameter, installed to a depth up to 20 m below existing surface levels.
  - *Intake pipeline,* the indicative pipeline alignment is approximately 1000 m in length, extending outwards from the central housing to the off-shore intake structure. Construction of the intake pipeline would be determined during detailed design; however, the following construction methodologies/ considered and assessed included Construction method 1 (CM1) Horizontal directional drilling (HDD) and (CM2) Pipejacking/micro-tunnelling.
  - *Intake structure (Off-shore),* the intake structure would be in the form of a horizontal intake with a velocity cap structure and low through-screen velocity to minimise impacts on marine species and habitat. The intake structure would be 5 m in diameter, have a minimum of 5 m clearance from the seabed and a depth of approximately 18 m of water.
- **Water treatment process plant** – The water treatment process plant would be houses in buildings which would be placed above ground level and located to allow incremental installation, if required. Services to and from the process equipment (e.g. power, communications, and raw feed water (seawater)) would comprise a mix of buried and overhead methods. The general components of the water treatment process would comprise:
  - *Pre-treatment:* a pre-treatment system is required to remove micro-organisms, sediment, and organic material from the raw feed water.
  - *Desalination*: a reverse osmosis (RO) desalination system made up of pressurising pumps and membranes. These would be comprised of modular components. In addition, a number of tanks and internal pipework would be required.
  - *Post treatment:* desalinated water would be treated to drinking water standards and stored prior to pumping to the potable water supply network.
- **Brine disposal system** – The desalination process would produce up to 56 ML/day of wastewater, comprising predominantly brine, as well as a small amount of pre-treatment and RO membrane cleaning waste. The waste brine from the desalination process would be transferred via a pipeline to a brine pump station at the Belmont WWTW for disposal via the existing ocean outfall pipe.
- **Power supply** – Power requirements of the amended water treatment process plant would require connection to Ausgrid's 33 kV line to the north-west of the water treatment process plant site, with new private power line connecting to a substation within the plant site.
- **Ancillary facilities** – Including a tank farm, equipment housing buildings, chemical storage and dosing, hardstand areas, stormwater and cross drainage, access roads, parking areas, and fencing, signage and lighting.

1.3 Objectives

The objectives of the DSI were to:

- Assess the type, extent and level of contamination at the Site.
- Assess the potential risk to human health and/or the environment as a result of past and/or present activities at the site.
- Provide recommendations as to the requirement for remediation and/or management of contaminated soils (if present).
- Provide an indicative in-situ waste classification for soils that may require disposal off-site.

1.4 Scope of work

The scope of works for the DSI included the following:

- Site history review including review of previous soil and groundwater assessment reports covering the Site.
- Review of geology, hydrology and topography information.
- Review of NSW Environment Protection Authority (EPA) records of notices and sites notified to the EPA under the *Contaminated Land Management Act* 1997 (CLM Act) and *Protection of the Environment Operations* (POEO) Environment Protection Licence (EPL) Register.
- Undertake a site inspection of the Site to assess the current conditions and identify any areas of potential contamination concern.
- Review of dial before you dig plans to identify potential locations of underground services and on-site clearance of the selected locations by an underground service location contractor.
- Excavation of twelve (12) hand augers (BH401 to BH412) to a maximum depth of 1 m below ground level (mbgl) within the northern extent of the proposed location of the desalination plant and intake design (around the current WWTW).
- Laboratory analysis of selected soil samples from each location for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticides (OCP), polychlorinated biphenyl (PCB), heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn and Hg) and asbestos in soil.
- Preparation of a report with reference to NSW EPA 2020 *Contaminated Land Guidelines. Consultants Reporting on Contaminated Land* summarising the results of the investigation and recommendations for further investigations or remediation (if required).

1.5 Limitation of investigations

Historical land titles and Council information (Section 10.7 certificates or register of development or building applications) were not reviewed as part of the desktop study. This DSI was limited to investigation of soils only and did not include investigation of groundwater. Soil sampling locations were limited to the desalination plant and intake area only and discussion is provided regarding soil analytical results from within this area from the current investigation and two previous investigations. It is noted that sampling within the southern extent of the Site cannot be completed until after approval of the Project. The presence of potentially intact A horizon soils, identified in the Aboriginal Cultural Heritage Assessment as having the potential to contain Aboriginal cultural materials, requires that an Aboriginal Cultural Heritage Management Plan (ACHMP) be in place prior to any works in this area. Investigation of this area will be undertaken following approval of the ACHMP and prior to construction.

2. Site 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	Hunter Water Corporation
Site address	Ocean Park Road, Belmont NSW
Current Lot and DP	Lot 1 DP 433549
Local Government Authority	Lake Macquarie City Council
Parish	Kahibah
County	Northumberland
Current zoning	SP2 Infrastructure
Current land use	Wastewater treatment works and vacant land
Proposed land use	Drought response desalination plant and intake
Site elevation (m AHD)	The Site is generally flat ranging from approximately 2 m AHD inside the former evaporation ponds and approximately 7 m AHD with a slope towards the eastern portion of the Belmont WWTW.
Site area (total)	Approximately 15.2 hectares.
Surrounding land use	North: Belmont WWTW. South: undeveloped sand dunes and dune vegetation. West: Ocean Park Road, followed by Belmont Lagoon and residential properties. East: Sand dunes, beach sands and the Pacific Ocean.
Site description	The Site lies directly to the south and east of the existing Belmont WWTW and includes two disused WWTW evaporation ponds. The Pacific Ocean is located approximately 250 m to the east and Belmont Lagoon is located approximately 350 m to the west of the Site. Development in the area comprises Ocean Park Road, an unnamed access road, the Belmont WWTW and associated infrastructure and a 33 kV Ausgrid power transmission line. Vegetation across the Site comprised Bitou bush, exotic grasses and native vegetation. Minor wetland/swamp type vegetation exists in the centre of the more western disused evaporation pond. Topographically the Site lies in a relatively low lying flat area. The surface has been modified to form the embankments of the disused evaporation ponds, which vary in height and are estimated to be in the order of 1.5 m - 3.0 m. To the north the Belmont WWTW lies on top of a low rise and to the east are undulating sand dunes. Within the Belmont WWTW it was noted that a spoil storage area and associated hardstand exist to the south-west. To the east wastewater treatment infrastructure exists adjacent the proposed water intake structure. An 11 kV Ausgrid underground electrical cable runs north-south along the eastern boundary line. A photograph log is presented in Appendix H.

3. Desktop investigation

3.1 Environmental setting

The following section provides an overview of the environmental setting of the Site as provided in GHD 2019 *Belmont Drought Response Desalination Plant. Contamination Assessment Report*.

Table 3-1 Site environmental setting

Information	Details
Geology and soils	The Site is underlain by medium to fine grained dune and marine sand, disturbed by fill and excavation works related to the construction of the Belmont WWTW. Reference to the soil landscape map identified the following soil landscapes within the Site: • Tuggerah (tg) landscape: Local relief is up to 20 m and slope gradients are in the range of 5% to 45%. Soils include loose sands and are covered with heathland vegetation. Possible limitations include wind erosion hazard, high permeability soils, localized flooding, high water table, strongly acid soil in places and the landscape coincides with a mine subsidence district. • Belmont Swamp (bs) landscape (west of the Site around Belmont Lagoon: comprises level to very gently undulating coastal swamps including shallow lakes and very shallow water tables. Dominant soil materials consist of organic topsoils underlain by saturated fine to coarse grained sands. • Narrabeen (na) landscape: Beaches and coastal foredunes on marine sands, with relief of up to 20 m and slopes of less than 3 %. Soils comprise loose, medium to coarse grained sands. Possible limitations include severe wave erosion hazard, severe wind erosion hazard, extreme foundation hazard, non-cohesive highly permeable strongly alkaline saline soils of very low fertility.
Acid sulfate soils	Reference to the ASS risk maps indicates the south west portion of the Site is located in an area with a high probability of occurrence of ASS and the north eastern portion of the Site is mapped as having a low probability of occurrence of ASS Beach areas within the east of the Site are mapped as having a low probability and/or 'no known occurrence' ASS risk.
Hydrogeology	An examination of the online WaterNSW register identified 23 registered groundwater bores within 2 km of the site (https://realtimedata.waternsw.com.au/). Review of the Australian Groundwater Explorer (BoM, 2018) identified 41 bores within 2 km of the site, with only 17 listed as functional. Water uses were recorded as irrigation supply and unknown purposes. Bore depths are no greater than 7 mbgl. Groundwater within the Site would be expected to vary between 1 m and 6 m bgl and flow east towards the Pacific Ocean. Based on the shallow depth to groundwater there is a potential for groundwater within the surrounding area to be used for either drinking water, recreational or irrigation purposes.

3.2 Previous investigations

A number of previous investigations have been conducted within and surrounding the Site. The following section provides a summary of the review of these reports.

Table 3-2 Summary of previous reports

Previous report	Summary
RCA, 2002, Upgrade of Belmont WWTW.	The investigation comprised the drilling of three boreholes to depths of approximately 8 m with installation of groundwater piezometers. The report includes a summary of results from a previous RCA investigation performed in 1999 that comprised two boreholes drilled to a depth of up to 6 m and a J&K (1994) geotechnical investigation that included four boreholes of unknown depth. The results of the investigations indicated the site is underlain by: • Fill, generally comprising sand with variable quantities of gravel to depths of up to 4.7 m; overlying • Natural sand, fine to medium grained, medium dense or better, to greater than 8 m depth Groundwater was encountered in the boreholes at depths ranging from 4.3 m to 5.6 m, approximately 0.5 m AHD. Laboratory testing indicated the sands were not actual or potential ASS. No contamination testing was undertaken.
SKM, 2012, Spoil Investigation Report.	The investigation comprised 18 test pits, four grab samples and four boreholes installed as monitoring wells to assess contaminants present in fill materials and the disused evaporation ponds adjacent to the WWTW. Depth of investigations ranged between 0.2 m to 5 m. Results indicated the site is underlain by fill, generally comprising sand with variable quantities of gravel and concrete with some brick, terracotta pipes and bitumen/asphalt to depths of up to 2.4 m overlying fine to medium grained sand. Soil analytical results were assessed against the former NEPM 1999 health investigation levels (HIL) commercial/industrial land use (HIL F). Results were reported above the HIL F for benzo(a)pyrene in SP10.1 and SP20.1. Comparison of the concentrations against the current NEPM 2013 reported concentrations below HIL D[1]. Elevated benzo(a)pyrene in these materials was attributed asphalt in the fill materials sampled. No asbestos was identified in any sample analysed. Two sediment samples (from the sludge ponds) reported elevated ammonia and total nitrogen. One sample (SED 2) recorded concentrations of total coliforms equal to the laboratory limit of reporting (LOR). It was concluded that the risks posed to human health and the environment by the deposited fill material was low. Sediment samples indicated that the western most sludge pond contained elevated concentrations of phosphorous, ammonia and nitrogen. Microbial results indicate that minimal coliforms are present in the ponds. Groundwater levels were noted to be in the range of 1.025 m to 2.68 m below the top of the cap. Groundwater analytical results indicated: • Elevated copper in MW3 and MW4 and zinc in MW2, marginally above ANZECC 2000 guidelines but below the NEPM 1999. Not considered to warrant further investigation. • Elevated nickel in up-gradient location MW1. Considered indicative of a background level. • Elevated ammonia in MW2 possibly from waste on the adjoining council land. • Elevated nitrogen at all locations.

[1] Further explanation of the relevant HILs are provided in Section 7.3.

Previous report	Summary
	• Elevated phosphorous in all locations with MW4 significantly higher which may correlate with elevated phosphorous in SED 1. • Slightly elevated TPH concentrations in MW3 considered to originate from the fill material on site.
AECOM, 2017a, Temporary Desalination Project Readiness Activities Stage 1 Belmont Conceptual Hydrogeological Model	This report presented an interpreted hydrogeology model of the site, comprising an unconfined aquifer within the Quaternary aged sands, which confines the underlying aquifer within the Permian aged sandstone (bedrock). The report found the water table to lie within the sand unit at approximately 4 m below ground level (mbgl). Groundwater flow was expected to be to the east, the degree of which was unknown. Localised westward flow may occur proximal to connected surface waters such as Belmont Lagoon. The thickness of the aquifer ranged from 15 m to 40 m, however, is expected to thin significantly towards the coast
AECOM, 2017b, Phase 1 Site Contamination Review. Potential Temporary Desalination Site, Belmont.	Key information from this Phase investigation included: • The neighbouring operational WWTW has reported concentrations of nutrients and heavy metals above adopted groundwater criteria and concentrations of microbiological analysis above the LOR which may present potential contamination links to the site (SKM, 2012). • Filling and waste material stockpiles adjacent to the site as shown on the 2004 aerial photograph (and confirmed during the inspection) may present potential sources of contamination. • The land has been identified to contain potential Unexploded Ordinance (UXO) which may impact the site. • Potential filling was evident on and surrounding the site. • Potential historical infrastructure associated with pipework connections to the old sludge ponds are reported to exist. • Hunter Water maintenance construction compound was located to the west of the site and was established in 2006. During the inspection this area had large stockpiles of spoil labelled as contaminated waste and waste with tar. The surface of the compound appeared to be unsealed compacted gravel, no fuel or chemical storage or infrastructure was observed in this area. Overall, AECOM considered that there was a moderate risk of potential contamination associated with the site that may present an unacceptable risk to human health and/or the environment. AECOM recommended a UXO survey of the site and a more detailed contamination assessment to identify the need for remediation or management measures to mitigate unacceptable contamination risks to make the site suitable for the proposed construction and use of the temporary desalination plant.
AECOM, 2017c, Preliminary Environmental Assessment, Lower Hunter Water Plan: Temporary Desalination Project.	This report details the findings of an environmental risk screening undertaken for the desalination plant project, including potential impacts on the surrounding natural and built environment and the potential concerns of the local community and stakeholders. AECOM 2017b (summarised above) identified contamination sources including the WWTW (with previously reported elevated concentrations of nutrients, heavy metals and microbials), filling and waste material stockpiles as well as redundant evaporation pond infrastructure and potential asbestos/contaminated materials associated with possible remaining subsurface pipework. The report identified key environmental concerns associated with the construction phase, which comprised: • Erosion and sedimentation of nearby watercourses. • Accidental spillages of chemicals/fuel by construction plant and equipment. • The potential for wind erosion from unsecured stockpiles created during construction.

Previous report	Summary
	• Disturbance of contaminated soils on-site, if present. It was anticipated that these impacts could be appropriately managed and mitigated in accordance with general construction management measures.
GHD 2019 Belmont Drought Response Desalination Plant. Contamination Assessment Report. GHD. November 2019.	This report detailed the results of a contamination assessment prepared to inform the Environmental Impact Statement (EIS) with regard to the potential contamination issues within the desalination plant and intake structures as well as water connections and to provide recommendations for management and/or remediation measures to be implemented during construction. The scope of work included the following: • Site history review including review of any available existing information including previous soil and groundwater assessment reports, former military uses etc. • A desk top review of geology, hydrology and topography information, a review of NSW EPA information, review of the NSW Office of Water groundwater database and • A general inspection of the proposal area to identify areas of potential contamination concern. • Collection of targeted soil samples from boreholes and test pits completed as part of the geotechnical investigations including six test pit locations (TP101 to TP106) and five borehole locations (BH101 to BH104 and BH108) from the desalination plant footprint and intake structure. Ten borehole locations (BH301 to BH306 and BHA301 to BHA304) were also targeted to the proposed water connection routes but discussion of the results does not form part of this assessment. • Laboratory analysis of selected soil samples from each location for TRH, BTEXN, PAHs, OCPS, PCBs, heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn and Hg), pH, cation exchange capacity (CEC) and asbestos. The desktop review identified that a potential exists for contamination to be present in the following areas of the site: • Fill material and potentially contaminated soils within the footprint of the former WWTW (sludge ponds) and Hunter Water compounds. • Existing bitumen and road base. • Historical use of herbicides and pesticides. • Illegal dumping of waste along the access tracks, trails and road corridor. • Other commercial/industrial properties that may store oils, fuels, grease, herbicides and pesticides. The typical subsurface profile encountered across the EIS Project Area comprised varying depths of fill over alluvial sands. Groundwater was encountered in all but two of the test locations (TP101 and TP106). Water levels were logged at the desalination plant site between 0.95 mbgl (BH101) to 4.1 mbgl (BH105). Soil samples reported contaminants below both HIL C and HIL D for all samples. A potential ACM fragment was noted on the surface between TP106 and GW103 (within the temporary desalination plant site), with additional smaller fragments noted near GW108 (70 m west of the temporary desalination plant site, outside of the construction footprint). These fragments were bonded and given that there were no fibres identified in soils, these are considered to be a low risk to workers. The results of the soil investigation indicated that soils within the proposed area are unlikely to present a significant health risk to workers during construction works and future site users post construction. The risk of exposure from any isolated contaminated areas or unexpected finds can be managed during construction with a Contaminated Soil Management Plan (CSMP).

Previous report	Summary
	Concentrations of copper, zinc, TRH and benzo(a)pyrene were reported above the recreational open space and commercial/industrial ecological investigation levels (EILs) and ecological screening levels (ESLs)[2] in five locations across the area investigated. The concentrations of contaminants are most likely attributable to the presence of fill materials and proximity of the samples to either the former WWTW evaporation ponds or adjacent tracks. The elevated levels of these contaminants could present a potential environmental risk to nearby sensitive receptors such as bushland and waterways if not managed appropriately during construction. Based on the investigations undertaken to date and taking into account the proposed future land use (desalination plant and associated service corridors), the site was considered suitable from a contamination perspective for redevelopment. As no significant human health or environmental risks to construction workers or future site users have been identified, no remediation within the site was proposed. Soils were generally classified as General Solid Waste, with the exception of soils at TP106 and BHA304 which are currently classified as Restricted Solid Waste. These classifications could be reduced with further sampling and TCLP analysis. In addition, soils where either asbestos fragments or acid sulfate soils were identified would also be classified as either asbestos waste or acid sulfate soil waste. It is noted that these classifications were preliminary only and further sampling and analysis would be required prior to disposal off site.
GHD 2020, Belmont Drought Response Desalination Plant D&C, Supplementary Geotechnical and Contamination Assessment for Onshore Plant Layout, GHD 2020.	GHD completed supplementary geotechnical and contamination investigations for the proposed seawater pump station and the amended design footprint. Works included hand auger and test pit excavations at eight locations (HA201, TP202 to TP208). Two locations TP203 and TP204 were located within the Site. Sample locations are presented in Figure 3, Appendix A. Selected samples were analysed from each location for TRH, BTEXN, PAHs, OCPs, PCBs, heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn and Hg), pH, cation exchange capacity (CEC) and asbestos. One sample was analysed for Per- and Polyfluoroalkyl Substances (PFAS). No visual or olfactory signs of contamination were noted during the investigation. No potential asbestos containing materials (ACM) were noted. Each contamination sample was screened for volatile organic compounds (VOCs) using a photo-ionisation detector (PID). All results were below 2 ppm. Samples were compared to the NEPM 2013 HIL/HSL and EIL/ESL[3] for commercial/industrial land use. All soil samples reported concentrations below the adopted health assessment criteria. Chrysotile asbestos was detected in the form of a loose fibre bundle in one soil sample analysed from TP204 0-0.1. Three samples (TP202 0-0.1, TP203 0-0.1, TP204 0-0.1) reported copper concentrations above the EILs, while zinc was reported above the EILs for TP202 0-0.1 and TP204 0-0.1. Based on the results, soils were generally classified as general solid waste with the exception of soils at TP202 0-0.1 which would be classified as restricted solid waste (based on a lead concentration) and TP204 0-0.1 which would be classified as restricted solid waste with asbestos (based on a lead concentration and asbestos).

2

[3] Further explanation of the relevant EILs/ESLs are provided in Section 7.4.

Previous report	Summary
	The report recommended further investigations be undertaken in the area of TP204 to assess the extent of asbestos impacts and potential risks to workers during construction. The report concluded that although there were levels of contaminants above the EILs, based on the proposed future use as a desalination plant and limited ecological amenity, it was considered unlikely these contaminants would present a significant risk to the environment in this area. It was also recommended that a contaminated soils management plan (CSMP) be prepared prior to construction to manage potential risks from disturbance and exposure of potential contamination within the site during construction.

3.3 NSW Environment Protection Authority

The following section provides an overview of the NSW EPA database searches in the surrounding area.

Table 3-3 Summary of NSW EPA data set searches

Information	Details
Contaminated land record of notices	Former Mobil Service Station (now 7-Eleven), Marks Point – 1.5 km SW of the Site - Agreed voluntary remediation proposal, (2003 and 2007), Site Audit Statement (2015), Notice of completion or withdrawal of VMP (2015), Amendment of repeal of order or notice (2015).
List of NSW contaminated sites notified to EPA	Coles Express Belmont - 502 Pacific Highway - 1.75 km NW Former Ampol Service Station, Belmont - 467-469 Pacific Highway - 2.25 km N Belmont Bus Depot, north Belmont - 2 Floraville Road - 2.75 km N Caltex, Belmont North - 406 Pacific Highway - 2.75 km N Woolworths Service station, Belmont North - 399 Pacific Highway - 2.75 km N Former Mobil Aviation Depot, Belmont Airport, Marks Point - 864 Pacific Highway - 2.75 km S Former Mobil Service Station (now 7-Eleven), Marks Point - 770-772 Pacific Highway - 1.75 km S
POEO licence register	Hunter and New England Area Health Service, Croudace Road, Belmont - Hospital – 3.2 km NW Hunter Water Corporation - Off Ocean Park Road, Belmont - WWTW – north of Site. Lake Macquarie Yacht Club - 1 Ada Street, Belmont - Boat mooring and storage - 1.4 km NW Marks Point Marina - Edith Street, Marks Point - Boat construction and maintenance - 2.3 km SW

Based on the results, the only site that is likely to affect the proposed development is the adjoining WWTW site. Due to the distance away from the Site, the remaining sites are unlikely to affect the proposed development.

3.4 Historical aerial photographs

A review of available historical aerial photographs (1965, 1975, 1983, 1987, 1990 and 1996) was completed for the Site. The aerial photographs show that the majority of the southern portion of the Site has remained undeveloped sand dunes with varying degree of vegetation since 1965. The northern portion of the Site appeared to have been used as evaporation ponds from around 1990 till sometime after 1996 (limit of aerial review). The aerial photographs are presented in Appendix B.

4. Preliminary conceptual site model

Based on the available information detailed above, the following preliminary contamination conceptual site model (CSM) has been developed for the potential sources of contamination (on-site) that may have, or may be able to, impact upon the Site. This preliminary CSM was developed to assist with the development of the scope of works for the DSI.

4.1 Potential contamination sources

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

Table 4-1 Potential contaminants of concern

Source	Description	Potential Contaminants of Concern
Placement of fill	Placement of fill in the footprint of the former WWTW evaporation ponds.	Heavy metals, PAH, TPH, BTEX, phenols, asbestos, nutrient and microbial
Evaporation ponds	Sludge from former WWTW operations	Heavy metals, PAH, TPH, BTEX, phenols, asbestos, nutrient and microbial
Spillage or leakage of oils, fuels	Spills and leaks associated with equipment and machinery historically used on the WWTW site.	Heavy metals, PAH, TRH, BTEXN, PCBs
Waste stored within Hunter Water compound	Potentially contaminated waste soils (tar etc.)	Heavy metals, PAH, TRH, BTEXN, Phenols, asbestos
Subsurface infrastructure potentially beneath the site	Subsurface infrastructure (pipes, conduit) potentially containing sludge residues or asbestos	Heavy metals, PAH, TPH, BTEX, phenols and asbestos
Illegal Dumping	Asbestos containing materials (ACM) may be present as a result of illegal dumpling	Asbestos, heavy metals, PAH, TRH, BTEXN, OCPs, OPPs and PCBs

4.2 Pathways

4.2.1 Migration pathways

The following migration pathways were identified for the Site:

- Vertical and horizontal migration of surface water and sediment
- Vertical and horizontal migration of groundwater
- Windborne dust

4.2.2 Exposure (contaminant uptake) pathways

Based on the identified receptors and the release, fate, and transport characteristics of the chemicals of potential concern, pathways through which receptors may become exposed include inhalation, ingestion and dermal absorption. These are discussed briefly below in the context of the site setting:

- Inhalation Exposure Pathway: There is the potential for creation of dust from unsealed surfaces and filled areas of the site. Risk of potential inhalation of asbestos fibres contaminated dusts. Soil or groundwater vapour inhalation is also possible but unlikely.
- Ingestion Exposure Pathway: Ingestion of contaminants by current and future site workers through construction and/or maintenance activities which may involve direct contact with contaminated soils or groundwater.
- Dermal Exposure Pathway: Exposure may occur via sorption through biological membranes such as skin. This pathway may be a concern whenever contaminated soil, groundwater comes into direct contact with a biological membrane. This pathway could also be a concern if contaminated surface water (runoff from the sites) was to come into direct contact with benthic and aquatic flora and fauna within off-site surface-water receiving environments.

4.3 Receptors

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

- Human health receptors:
  - Site workers or visitors (e.g. workers, subcontractors and members of public).
  - Off-site receptors (users of surrounding water bodies, beach areas or walking tracks for recreational purposes).
  - Current and future occupants of surrounding properties.
- Environmental receptors
  - Flora and fauna within the proposal area and surrounding land.
  - Local drainage channels and surface water.
  - Groundwater beneath the study area.
  - Off-site ecosystems.

5. Sampling and analysis plan and methodology

5.1 Summary of field activities

Field investigations have been undertaken within the Site between 31 July 2018 and 9 September 2020. A summary of the activities undertaken during this time is presented below. Sample locations are presented in Figure 3, Appendix A.

Table 5-1 Field investigation program

Date	Activity
31 July 2018	Drilling and sampling BH104 (GHD 2019).
17 August 2018	Drilling and sampling BH102 and BH103 (GHD 2019).
22 August 2018	Drilling and sampling BH108 (GHD 2019).
29 August 2018	Drilling of BH101 (GHD 2019).
6 September 2018	Excavation and sampling from test pits TP101 to TP106 (GHD 2019)
10 June 2020	Excavation and sampling from test pits TP202 to TP208 and hand auguring of HA201 (GHD 2020).
8 and 9 September 2020	Hand auguring and sampling of boreholes BH401 to BH412 as part of this current investigation.

5.2 Sampling and analytical program

Soil samples have been collected during geotechnical and environmental investigations to assess the potential for soil contamination within the Site. Samples locations within the Site comprised both grid spaced and targeted locations selected based on the findings of the desktop review (Section 3) and field observations.

The analytical program is summarised in Table 5-2. The investigation locations are presented in Figure 3, Appendix A.

Table 5-2 Investigation locations, sampling and analytical program

Location	Total Depth (m)	Investigation Method	Soil Samples Analysed (mbgl)	Analytical Parameters
Investigation location 31/07/2018				
BH104	20.0	Borehole	BH104_0.0-0.2 BH104_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
Investigation locations 17/08/2018				
BH102	22.0	Borehole	BH102_0.0-0.2 BH102_0.5-0.6	Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
BH103	41.1	Borehole	BH103_0.0-0.2 BH103_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
Investigation location 22/08/2018				
BH108	20.5	Borehole	BH108_0.0-0.2	Asbestos
Investigation locations 29/08/2018				
BH101	20.0	Borehole	BH101_0.0-0.2 BH101_0.45-0.5	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
Investigation locations - Composite samples (31/07/2018 to 29/08/2018)				
COMP1	-	-	BH102_0.0-0.2 and BH103_0.0-0.2	OCP, PCBs
COMP2	-	-	BH101_0.0-0.2 and BH104_0.0-0.2	OCP, PCBs
Investigation locations 06/09/2018				
TP101	2.0	Test pit	TP101_0.0-0.2 TP101_0.5-0.6	pH, CEC, Heavy metals, TRH, BTEXN, PAH pH, CEC
TP102	2.0	Test pit	TP102_0.0-0.2	Heavy metals, TRH, BTEXN, PAH
TP103	1.9	Test pit	TP103_0.0-0.2 TP103_0.5_0.6 TP103_1.0-1.1	Heavy metals, TRH, BTEXN, PAH pH pH
TP104	2.2	Test pit	TP104_0.0-0.2	Heavy metals, TRH, BTEXN, PAH
TP105	1.6	Test pit	TP105_0.0-0.2 TP105_0.6-0.7	pH, CEC, Heavy metals, TRH, BTEXN, PAH pH, CEC
TP106	1.8	Test pit	TP06_0.0-0.2 (FD20)	Asbestos, Heavy metals, TRH, BTEXN, PAH

Location	Total Depth (m)	Investigation Method	Soil Samples Analysed (mbgl)	Analytical Parameters
Investigation locations 10/06/2020				
HA201	0.4	Borehole	HA201_0.0-0.1 HA201_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
TP202	1.1	Test pit	TP202_0.0-0.1 TP202_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
TP203	1.3	Test pit	TP203_0.0-0.1 TP203_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
TP204	1.6	Test pit	TP204_0.0-0.1 TP204_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Asbestos, Heavy metals, TRH, BTEXN, PAH
TP205	1.6	Test pit	TP205_0.0-0.1 TP205_0.5-0.6 (FD01)	Asbestos, Heavy metals, TRH, BTEXN, PAH Asbestos, Heavy metals, TRH, BTEXN, PAH
TP206	1.6	Test pit	TP206_0.0-0.1 TP206_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
TP207	0.3	Test pit	TP207_0.0-0.1 TP207_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH, PFAS
TP208	1.1	Test pit	TP208_0.0-0.1 (FD05) TP208_0.2-0.3	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals, TRH, BTEXN, PAH
COMP1			TP203_0.0-0.1, TP204-0.0-0.1, TP205_0.0-0.1	OCP, PCBs
COMP2			TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3	OCP, PCBs
COMP3			HA201_0.2-0.3, TP202_0.2-0.3, TP206_0.2-0.3	OCP, PCBs
COMP4			TP203_0.5-0.6, TP204_0.5-0.6, TP203_0.5-0.5	OCP, PCBs
Investigation locations 8-9/09/2020				
BH401	1.1	Borehole	BH401_0.2-0.3 BH401_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals
BH402	1.1	Borehole	BH402_0.2-0.3 BH402_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals
BH403	1.1	Borehole	BH403_0.2-0.3 BH403_0.5-0.6	Asbestos, Heavy metals, Heavy metals

Location	Total Depth (m)	Investigation Method	Soil Samples Analysed (mbgl)	Analytical Parameters
BH404	1.1	Borehole	BH404_0.2-0.3 BH404_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals
BH405	0.8	Borehole	BH405_0.2-0.3 BH405_0.7-0.8	Asbestos, Heavy metals Heavy metals
BH406	1.1	Borehole	BH406_0.2-0.3 (FD03) BH406_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals Heavy metals
BH407	1.1	Borehole	BH407_0.2-0.3 (FD04) BH407_0.5-0.6 BH407_1.0-1.1	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals TRH, BTEXN, PAH Heavy metals
BH408	1.1	Borehole	BH408_0.2-0.3 BH408_0.5-0.6	Asbestos, Heavy metals Heavy metals
BH409	1.1	Borehole	BH409_0.2-0.3 BH409_1.0-1.1	Asbestos, Heavy metals Heavy metals
BH410	1.1	Borehole	BH410_0.2-0.3 BH410_0.5-0.6	Asbestos, Heavy metals, TRH, BTEXN, PAH Heavy metals
BH411	1.1	Borehole	BH411_0.2-0.3 BH411_1.0-1.1	Asbestos, Heavy metals Heavy metals
BH412	1.1	Borehole	BH412_0.2-0.3 BH412_1.0-1.1	Asbestos, Heavy metals, TRH, BTEXN,PAH Heavy metals
COMP1			BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3	OCP, PCBs
COMP2			BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3, BH408_0.2-0.3	OCP, PCBs
COMP3			BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3, BH412_0.2-0.3	OCP, PCBs
COMP4			BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6, BH412_0.5-0.6	OCP, PCBs

Metals included As, Cd, Cr, Cu, Hg, Pb, Ni, and Zn

TRH – Total recoverable hydrocarbons

BTEXN – Benzene, toluene, ethylbenzene, xylenes and naphthalene

PAH – Polycyclic aromatic hydrocarbons

OCP – Organochlorine pesticides

PCB – Polychlorinated biphenyl

PFAS – Per- and Polyfluoroalkyl Substances

5.3 Soil sampling methodology

Soil investigations were undertaken by GHD Geotechnical and Environmental Engineers. All works were undertaken in accordance with GHD's written Standard Field Operating Procedures.

A summary of the sampling and analysis works completed as part of this DSI are provided in Table 5-3. The summary relates to the investigations conducted between July 2018 and September 2020.

Table 5-3 Soil sampling methodology

Item	Description
Date of fieldwork	31 July, 17, 22, 29 August, 6 September 2018 10 June and 8 - 9 September 2020
Work clearance	JSEA including daily pre-work assessment and hazard identification
Technical guideline	Department of Sustainable Natural Resources *Soil Survey Standard Test Method Unified Soil Classification System: Field Method* NSW EPA (1995), *Sampling Design Guidelines.*
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	All field observations and subsurface conditions were recorded on lithological logs (Appendix C) in accordance with the *Unified Soil Classification System: Field Method*.
Soil sampling	Test pits and boreholes were excavated using either an excavator, truck mounted drill rig or hand auger. Soil samples were generally collected at the surface, 0.3 m below ground level (mbgl), 0.5 mbgl and at 0.5 m intervals thereafter. Samples were collected from significant soil horizons encountered including fill materials and underlying natural materials and other strata which exhibited unusual characteristics. Samples were collected either directly from the auger or from the excavator bucket, ensuring the soils were not in direct contact with the metal. Samples were collected using new, disposable nitrile gloves to limit cross contamination between sampling locations.
Sample handling and transport	Samples were placed in unpreserved laboratory supplied snap lock bags (asbestos testing) and glass jars (soil contamination testing) and stored in an ice filled cooler for sample preservation prior to and during shipment to the testing laboratory. All sample jars and bags were clearly labelled with a sample number, sample location, sample depth, and sample date. All samples were transported under signed Chain of Custody documentation to ALS Environmental and Eurofins (independent and National Association of Testing Authorities Australia (NATA) accredited laboratory) for the analysis requested.
Quality assurance and quality control (QA/Q)	Duplicate analysis samples sets (split and field duplicates) were also collected and analysed at a general rate of 1 in 10 samples for QA/QC purposes. No trip spikes, trip blanks or rinsate samples were prepared or analysed.

6. Quality assurance/quality control

6.1 Data quality objectives

The purpose of establishing data quality objectives is to ensure the field investigations and analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment. The data quality objectives and the procedures designed to achieve these objectives are listed in Table 6-1 below.

Table 6-1 Data quality objective decision process

Process	Response
Step 1. Define the problem that necessitates the study.	The proposed drought response desalination plant lies adjacent to a WWTW and partially over former evaporation ponds and has been subject to historical placement of fill. As a result, the proposed construction work has a potential to disturb contaminated soils. The presence of contamination impacts within the study area is currently unknown. Hunter Water need to understand the potential risks to workers and environment that may be caused through the disturbance of contaminated soils.
Step 2. Identify the Goal of the Study. State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes.	The objectives of the investigations were to: • Understand the potential contamination issues within the Site. • Provide recommendations for management and/or remediation to be implemented during construction.
Step 3. Identify Information Inputs. Identify data and information needed to answer study questions.	Data inputs for the proposal include: • Previous investigations undertaken. • Desktop review of available information regarding the Site. • Soil sampling undertaken as part of this investigation.
Step 4. Define the Boundaries of the Study. Specify the target population and characteristics of interest, define spatial and temporal limits, scale of inference.	The spatial boundaries of the works are defined by those described in Section 2 and 3 and shown in Figure 1 and 2, Appendix A.
Step 5. Develop the Analytic Approach. Define the parameters of interest, specify the type of inference, and develop the logic for drawing conclusions from findings.	Reviews of historical site information and previous assessments as outlined in Section 3 have been used to identify the major contaminants of concern. Results reported as part of this investigation and previous investigation will be used to better characterise the areas of concern.
Step 6. Specify Performance or Acceptance Criteria. Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use.	The guidelines as listed in Section 7 will be used to assess the contamination status of the soils and groundwater within the study area. Data Quality Indicators as described in Section 6.2 will be used to evaluate the acceptability of the data.
Step 7. Develop the Plan for Obtaining Data. Select the resource-effective sampling and analysis plan that meets the performance criteria.	Samples were collected as per Section 5 from geotechnical boreholes/ test pits. QA/QC procedures were used and QC samples collected to allow evaluation of Data Quality Indicators as described in Section 6.2.

6.2 Data Quality Indicators

GHD has selected the following Data Quality Indicators to ensure that the data is of a quality from which to draw conclusions:

- Data Representativeness – is the data representative of site conditions?
- Data Completeness – are there comprehensive records available from all field work undertaken, and have all areas of concern been sampled and analysed?
- Data Comparability – is the quality of the data such that samples analysed at different times can be compared, and is data consistent with field observations?
- Precision and Accuracy for Sampling and Analysis – does the laboratory achieve the relevant Quality Control Criteria?

6.3 QA/QC results

The methodology, results and discussion of the Quality assurance/Quality Control program are presented in Appendix D.

7. Basis of assessment

7.1 Framework for assessment

The framework on which the contamination status of the Site was assessed was based on guidelines published or approved by the NSW EPA under *Section 105* of the *Contaminated Land Management (CLM) Act 1997*, supplemented by other relevant guidelines where required. The guidelines that were referenced include the following:

- NEPC (2013). National Environment Protection (Assessment of site Contamination) Measure (NEPM), 1999 as amended in May 2013.
- NSW EPA (1995). Contaminated sites: Sampling Design Guidelines, 1995.
- NSW EPA (2020). Contaminated land guidelines: Consultants Reporting on Contaminated Land, 2020.
- NSW DEC (2017). Contaminated Land Management: Guidelines for NSW site Auditor Scheme, (3rd Edition), 2017.
- NSW EPA (2015). Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997, 2015.
- NSW EPA (2014). Waste Classification Guidelines. New South Wales Environment Protection Authority, 2014.

7.2 Soil assessment criteria

The National Environment Protection (Assessment of Site Contamination) Measure (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.

The NEPM includes a range of health investigation levels (HILs) and health screening levels (HSLs), ecological investigation levels (EILs) and ecological screening levels (ESLs) 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:

- Subsurface materials generally comprised coarse, sandy soils.
- There is a potential for direct contact within contaminated soils.
- There is a potential for ecological impacts through incorrect management of contaminated soils during construction.

7.3 Health investigation levels and health screening levels

Health investigation levels (HILs) and HSLs 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. HSLs are specific for 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 Site includes a portion of a WWTW, and is proposed to be a desalination plant, commercial/industrial assessment criteria have been adopted to assess potential risks to human health. The criteria are sourced from Schedule B1 of the NEPM and Table 4 of CRC Care Technical Report No. 10 and are summarised below:

- HIL D – Commercial/industrial including premises such as shops, offices, factories and industrial sites.
- HSLs for Direct Contact – HSL D Commercial/industrial.

7.4 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. Added contaminant limit based 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.

The application of added contaminant limit based EILs is also dependent on site specific soil characteristics including pH, cation exchange capacity and clay content. A selection of samples across the Site were analysed for pH and CEC and the following assumptions have been made based on the results.

- pH analysis was undertaken as part of the contamination investigation and geotechnical works and ranged between 5.7 and 6.7. The average pH value (of 4 samples) was 6.3. A pH of 6.0 has been adopted for this assessment.
- Cation exchange capacity analysis was undertaken during this assessment on six samples. Values ranged between 0.4 milliequivalents per 100 g and 8.4 milliequivalents per 100 g. A CEC of 5 milliequivalents per 100 g has been adopted for this assessment as the most conservative CEC.
- Clay content for sand and fill materials was identified during the geotechnical works (GHD, 2018) and ranged between 0.1% and 5.1% with an average of 2.2%. A clay content of 2.5% was adopted for the Cr III criterion as this is the value within the NEPM closest to the average. The selection of Cr III criterion is not CEC or pH dependent.

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.

As with health assessment criteria, based on the previous and current land use, and the proposed end use for the site, the following assessment criteria have been considered:

- Soil specific added contaminant limits (ACL) and ESLs (coarse textures) for commercial and industrial use.

7.5 Asbestos

The NEPM provides guidance relating to the assessment of known and suspected asbestos contamination in soil and addresses both friable and non-friable forms of asbestos. The health screening levels for asbestos in soil have been adopted from the Western Australian Department of Health (WA DoH) *Guidelines for Remediation and Management of Asbestos Contaminated Sites in Western Australia* (WA DoH 2009).

The NEPM guidance emphasises that the assessment and management of asbestos contamination should take into account the condition of the asbestos materials and the potential for damage and resulting release of asbestos fibres. Therefore, for the purposes of assessing the significance of asbestos in soil contamination, three terms are used as summarised below:

- Bonded asbestos containing material (Bonded ACM) – sound condition although possibly broken or fragments and the asbestos is bound in a matrix.

- Fibrous asbestos (FA) – friable asbestos materials such as severely weathered ACM and asbestos in the form of loose fibrous materials such as insulation.
- Asbestos fines (AF) – including free fibres of asbestos, small fibre bundles and also fragmented ACM that passes through a 7 mm x 7 mm sieve.

From a risk to human health perspective, FA and AF are generally considered to be the equivalent to "friable" asbestos in Safe Work Australia (2011), which is defined therein as 'material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contains asbestos'.

Bonded asbestos ACM in sound condition represents a low human health risk. However, both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres and may represent a significant human health risk if disturbed and fibres are made airborne.

Commercial/Industrial "D" health screening levels (HSL) have been adopted as the most appropriate to the Assessment Area. The adopted assessment criteria is outlined in Table 7-1.

Table 7-1 Adopted assessment criteria

Form of Asbestos	Health Screening Level (w/w) – Commercial/Industrial
Bonded ACM	0.05%
FA and AFa (friable asbestos)	0.001%
All forms of asbestos	No visible asbestos for surface soil

a. The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.

A tiered approach to risk assessment of asbestos contamination is recommended, including the development of an appropriate Conceptual Site Model (CSM). A weight of evidence approach is recommended with consideration given to factors such as the distribution of different fill types, the heterogeneity of the contamination and the uncertainty associated with the sampling methodology.

The NEPM states that if the Tier 1 screening levels are not exceeded, and an appropriate level of investigation has been carried out, then no contamination management actions are required except for ensuring the surface soil is free of visual asbestos. This may be achieved by multidirectional raking or tilling and hand-picking of exposed fragments of bonded ACM. Final visual inspection of the assessment and remediated areas should not detect any visible asbestos.

If exceedances of the Tier 1 screening levels are exceeded either a Tier 2 analysis should be carried out or a conservative management response implemented. The Tier 2 assessment would comprise a qualitative assessment of risk taking into account the nature and extent of contamination; the site specific exposure scenario(s) including the intensity of relevant site activities; the impact of any mitigating factors such as soil type and moisture conditions (and likely variation); the proposed remediation and management measures; and the final use of the site.

7.6 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 included:

- 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.

7.7 Selected criteria

The methodology for assessing contamination levels in soils was to use the HILs, HSLs, EILs and ESLs (selected as relevant to the area of the site and the proposed land use) 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.
- Soils containing elevated concentrations of contaminants, which may pose a risk to the environment 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. A qualitative risk assessment may be sufficient to evaluate the potential impact for the proposed land use.
- 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 remediation or management, or further assessment by 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 (such as removal, capping or placement under roadways) may be adopted, depending on the likely cost effectiveness of further assessment when compared with the cost of conservative management.

The assessment criteria used to assess soil contamination levels are provided in Table A, Appendix E.

7.8 Waste classification

Soils that may require offsite disposal as part of site works were classified using the six-step process and criteria detailed in *Waste Classification Guidelines – Part 1: Classification of Waste* (NSW EPA 2014). Analytical results will be assessed against Table 1 of the guidelines to provide an indication of the type of waste classification likely to be present for soils on site.

8. Investigation results

This section presents the results of all sediment and soil investigations undertaken on the site by GHD between July 2018 and September 2020.

Analytical results are summarised in the following tables in Appendix E.

- Table A: Soil analytical results.
- Table B: Waste classification.
- Table C: QA/QC Results.

Laboratory reports are presented in Appendix F.

8.1 Soil profile

Soils encountered during the investigations are described in Table 8-1 below and soil logs are presented in Appendix B.

Table 8-1 Generalised lithology

Depth (mbgl)	Generalised Lithology
GHD 2019	
0 – 1.3	FILL –silty SAND, sandy GRAVEL and CLAY
1.3 -31.0	ALLUVIAL SAND, SAND and silty SANDS. Thin clay and silt lenses
31.0 – 41.0	Alluvial CLAY
GHD 2020	
0 – 0.5	FILL - Sand / Sandy CLAY with gravel
0.3 – 0.5	Clayey SAND, low to medium plasticity, with gravel
0.5 – 1.6	SAND, Poorly graded with shell
8 -9 September 2020	
0 – 0 2	FILL – Clayey SAND / Gravelly SAND (with the exception of BH405, BH407 and BH410 Gravelly SAND encountered to a maximum depth of 0.5 -0.9 m)
0.2 – 1.1	SAND, poorly graded with trace gravel

A slight hydrocarbon odour was observed within 0.2 m of the soil surface at BH401, BH402 and BH404 during collection of soil samples. No staining was observed during the investigation.

One fragment of potential asbestos containing material (PACM) was noted on the track halfway between TP106 and GW102 (70 m west of the construction footprint opposite the proposed drought response desalination plant site). Small fragments of potential ACM were also noted near the surface of GW108.

Samples were screened for Volatile Organic Compound (VOC) vapours using a Photo-Ionisation Detector (PID). All PID results were between 0.1 and 18.2 ppm with the exception of BH404_0.2-0.3 which had a PID of 97.2 ppm. This indicates that there is a low potential for significant contamination by volatile hydrocarbons within the Site.

Groundwater was encountered at all of the test locations, excluding TP101, TP106, HA201, TP205 –TP206 and BH401 - BH412. Water levels were logged in boreholes BH101 (0.95 bgl) and BH105 (4.1 mbgl) in August 2018.

8.2 Soil analytical results

8.2.1 Health

All samples reported contaminant concentrations below the adopted assessment criteria within the Site.

Asbestos (chrysotile) was detected in the form of a loose fibre bundle in one soil sample analysed (TP204_0.0-0.1). Further, a fragment of PACM was noted during GHD 2018 on the track halfway between TP106 and BH102/GW102. Small fragments of PACM were also noted near the surface of BH108/GW108.

Analytical results are summarised in Table A in Appendix E, while detailed laboratory results sheets and Chain of Custody documents are provided in Appendix F.

8.2.2 Ecological

All samples reported concentrations below the adopted assessment criteria with the exception of the following:

- TP106_0.0-0.2 and its duplicate (FD20) with concentrations of copper (194 and 206 mg/kg) and zinc (3,130 and 3,740 mg/kg) above the EILs (commercial/industrial) of 140 mg/kg and 360 mg/kg respectively.
- TP202_0.0-0.1 with concentrations of copper (450 mg/kg) and zinc (730 mg/kg) above the EIL (commercial/ industrial) of 140 mg/kg and 360 mg/kg respectively.
- TP203_0.0-0.1 with concentrations of copper (230 mg/kg) above the EIL (commercial/industrial) of 140 mg/kg.
- TP204_0.0-0.1 with concentrations of copper (370 mg/kg) above the EIL (commercial/ industrial) of 140 mg/kg.

Analytical results are summarised in Table A in Appendix E, while detailed laboratory results sheets and Chain of Custody documents are provided in Appendix F.

8.2.3 Waste classification

Soil results were compared against specific contaminant concentration (SCC) for classification without TCLP as outlined in Table 1 of the NSW EPA (2014) *Waste Classification Guidelines.*

Waste classification results are presented in Table B in Appendix E. In summary, soils within the Site were generally within with General Solid Waste contaminant threshold (CT1) with the exception of the following:

- TP106 0-0.2 and its duplicate (FD20) which reported lead (246 and 287 mg/kg) above the CT1 threshold of 100 mg/kg.
- TP202_0.0-0.1 which reported lead (130 mg/kg) above the CT1 threshold of 100 mg/kg.
- TP204_0.0-0.1 which reported asbestos and lead (130 mg/kg) above the CT1 threshold of 100 mg/kg (lead).
- at BH402_0.2-0.3 which reported chromium (III+VI) (140 mg/kg) above the CT1 threshold of 100 mg/kg.

It is noted that lead and chromium were reported below both the nominated health (1,500 mg/kg and 3,600 mg/kg) and ecological (1,800 mg/kg and 420 mg/kg) investigation levels, which are higher than the CT1 threshold (100 mg/kg).

9. Discussion

9.1 Desk top assessment

Based on the results of the desktop review and site inspection, the following potential areas of environmental concern were identified within the Site and surrounds:

- Placement of fill in the footprint of the former WWTW evaporation ponds.
- Evaporation ponds including sludge from former WWTW operations.
- Spillage or leakage of oils, fuels.
- Waste stored within Hunter Water WWTW (compounds).
- Subsurface infrastructure potentially beneath the site.
- Illegal dumping including asbestos containing materials.

9.2 Site investigations

9.2.1 Subsurface conditions

The typical subsurface profile encountered across the Site comprised varying depths of fill consisting of silty sands, gravels and clays overlying alluvial sands and clays.

Groundwater was encountered at all of the test locations, excluding TP101, TP106, HA201, TP205 –TP206 and BH401 - BH412. Water levels were logged in boreholes BH101 (0.95 bgl) and BH105 (4.1 mbgl) during desalination plant investigations in August 2018. It is noted that groundwater levels are anticipated to vary based on climatic conditions, tidal variations and rainfall. All of the test pits were seen to collapse prior to achieving target depth.

9.2.2 Health-based assessment criteria

All samples analysed as part of the 2019 and 2020 investigations reported contaminant concentrations below the health assessment criteria for commercial/industrial land use.

During GHD 2019, a fragment of non-friable PACM was observed between TP106 and GW102 within the proposed drought response desalination plant site and other small fragments of non-friable PACM were found on the surface near GW108 (70 m west of the construction footprint opposite the proposed drought response desalination plant site). No asbestos was detected in soil samples analysed from this investigation. However, during the GHD 2020 investigation, chrysotile asbestos was detected in the form of a loose fibre bundle in the surface soil sample from TP204. The presence of asbestos and PACM within the Site is considered to relate to historical illegal dumping within and surrounding the areas investigated. The extent of the asbestos contamination around TP204 has not been delineated due to heritage restrictions in the immediate area preventing further disturbance to the surface soils. Investigation of this area will be undertaken following approval of the ACHMP and prior to construction as described in Section 1.5).

9.2.3 Ecological-based assessment criteria

Concentrations of copper and zinc were above commercial/industrial land use EILs in four and two locations respectively. The elevated concentrations of contaminants are most likely attributable to the presence of fill materials and proximity of the samples to the former WWTW evaporation ponds.

Although levels of contaminants were found to be above the commercial/ industrial EILs/ESLs, based on the use of the adjacent area as a WWTW and the proposed future use as a desalination plant, there is currently and future limited ecological amenity in this area and it is considered unlikely that these contaminants would present a significant risk to the environment for the Site and surrounds.

9.3 Waste classification

Based on review of results against the NSW EPA Waste Classification Guidelines, soils would likely be classified as General Solid Waste, with the exception of the following

- Soils where chemical concentrations are above the CT1 threshold, including TP106, TP202, TP204 and BH402 which would be classified as Restricted Solid Waste.
- Soils at TP204 where asbestos has been identified would also be classified as Special Waste - Asbestos in addition to Restricted Solid Waste.

These classifications are only preliminary and it is possible that the above classifications may be reduced with toxicity leachate procedure testing (TCLP), which was not undertaken as part of the scope of works for this project. During construction works, classification of any soils that are to be disposed of off-site would need to be undertaken in accordance with the NSW EPA Waste Classification Guidelines. .

9.4 Updated conceptual site model

Based on the results of the investigations, the conceptual site model has been updated to evaluate potentially complete significant source-pathway-receptor linkages in respect of risks to human health and the environment. The CSM for the site is presented in Table 9-1 below.

Based on the results of this investigation, the contaminants of potential concern (CoPC) in soils are considered to comprise:

- Heavy metals including copper and zinc.
- Asbestos.

Table 9-1 Updated Conceptual site model

Potential Source	Pathway	Receptor	Potential for completeness
Contaminated soils from: -Deposition of wastes and fill -Stored waste stockpiles -Spills or leaks of oils and fuels -Potential hazardous materials from illegal dumping	Inhalation of potentially contaminated dusts	On-site workers, intrusive maintenance workers and visitors	Possible due to identification of asbestos within surface soils at one location and PACM on the surface around the Site. The potential exists for mobilisation of dusts during site redevelopment.
		Future commercial/industrial land use	
		Off-site users	
	Direct contact	On-site workers, intrusive maintenance workers and site visitors	Unlikely as no contaminants in surface soils were identified above HILs across the Site.
		Future commercial/industrial land use	
		Off-site users	Unlikely given the thick cover of vegetation and low potential for mobilisation of contaminated soils to migrate off site.
		Ecological receptors e.g. flora and fauna in surrounding areas	Possible given concentrations of copper and zinc were identified in soils above the EILs. However, the Site has little ecological amenity (current and future). Low potential for off-site migration given thick cover of vegetation and low potential for mobilisation of surface soils.
Potentially **contaminated surface water** run-off	Direct contact	On-site workers and visitors	Unlikely as no contaminants in surface soils were identified above HILs across the Site.
		Off-site users	
		Ecological receptors e.g. flora and fauna in surrounding areas	Possible given soil impacts have been identified above EILs and that there is a potential for surface runoff to be generated on site and potentially migrate off-site.
	Surface water migration to impact groundwater	Ecological receptors offsite	Unlikely due to the low contaminant concentrations identified within the Site.
		Potable groundwater extraction	
Potentially **contaminated groundwater** and possible lateral migration off-site.	Direct Contact (accidental ingestion)	On-site workers, intrusive maintenance workers, site visitors.	Unlikely, as no contaminants in soils were identified above HILs across the Site and limited access to groundwater in the vicinity of the site.
	Lateral migration in groundwater	Ecological receptors offsite	Unlikely due to the low contaminant concentrations identified within the Site to affect groundwater and for groundwater to affect the nearby drainage lines.
		Potable groundwater extraction	

10. Conclusions and recommendations

10.1 Conclusions

In accordance with the objectives detailed in Section 1.3, and based on the information contained within this assessment and limitations outlined in Section 1.5 and Section 11, the following conclusions are made:

- Based on the desktop review and site inspection, the potential sources of contamination were identified to include:
  - Placement of fill in the footprint of the former WWTW evaporation ponds.
  - Evaporation ponds containing sludge.
  - Spillage or leakage of oils and fuels.
  - Waste stored within WWTW (compounds).
  - Subsurface infrastructure potentially containing sludge or asbestos.
  - Illegal dumping including asbestos containing materials.
- The typical subsurface profile across the Site comprised varying depths of fill consisting of silty sands, gravels and clays overlying alluvial sands and clays.
- All samples analysed as part of the investigations considered in this DSI reported contaminant concentrations below the health assessment criteria for commercial/industrial land use.
- Asbestos was identified in surface soils at one location and PACM was identified at two locations on the ground surface. This is considered to relate to historical illegal dumping within and surrounding the Site. The extent of the asbestos has not been delineated due to Aboriginal Cultural Heritage Assessment Report identifying that ground disturbing activities in the area require the preparation and approval of an Aboriginal Cultural Heritage Management Plan, which won't be completed until Project approval have been received.
- Concentrations of copper and zinc were above the EILs, however based on the use of the adjacent area as a WWTW and the proposed future use of the Site as a desalination plant, there is currently and would be limited ecological amenity in this area in the future and is considered unlikely that these contaminants would present a significant risk to the environment for the Site and surrounds.
- Soils within the Site would likely be classified as General Solid Waste, with the exception of soils where chemical concentrations are above the CT1 threshold or contain asbestos which would be classified as Restricted Solid Waste or Special Waste – Asbestos respectively. These classifications may be reduced with further sampling and analysis (TCLP). It is noted that these classifications are preliminary only and further sampling and analysis would be required prior to disposal off site.

Based on the analytical results for soil investigations to date, and taking into account the proposed future land use (commercial/industrial), the potential for significant impacts to human health or sensitive environmental receptors during redevelopment or future use is considered to be low with the exception of the area around TP204 where asbestos was identified in surface soils and any areas where PACM is identified on the ground surface.

10.2 Recommendations

Based on the findings of the investigations, the following recommendations are made with regards to remediation and/or management for the Site prior to redevelopment works for commercial/industrial land use:

- Further investigations be undertaken in the area of TP204 following approval of the ACHMP (refer to limitations in Section 1.5) to assess the extent of asbestos impacts and potential risks to workers during construction.
- Preparation of contaminated soils management plan (CSMP) prior to construction to manage potential risks from disturbance and exposure of potential contamination and unexpected finds within the site during construction. No specific remediation within the Site is proposed at this stage. The CSMP would include requirements for:
  - Further inspection of the ground surface to assess the presence of PACM prior to disturbance.
  - Stockpiling soils away from sensitive receptors such as waterways and drainage lines.
  - Testing of soils to assess suitability if they are to be placed near sensitive receptors.
  - Waste management.
  - Unexpected contaminated soils finds protocols.

The Site has been investigated for contamination as detailed in this report. However, a degree of uncertainty is inherent in any site contamination investigation and a potential exists for undetected contaminated soils, wastes or hazardous building materials to be identified during any future works that disturb the ground surface. In particular, there is a potential for unidentified contaminated materials to be present under areas of the site not investigated or in any fill materials that may be present on site. Indications of potential contamination may include:

- Stained or discoloured fill, soils or seepage water.
- Construction/demolition wastes such as concrete, bricks, timber, tiles, fibre cement sheeting, fragments and pipes.
- General rubbish such as plastic, glass, packaging.
- Imported materials such as ash or slag or coal chitter.

Should unexpected contaminated soils be identified during any future ground works, advice should be sought from a suitably qualified environmental consultant and any additional investigations/remediation be completed in general accordance with guidelines developed or endorsed by NSW EPA.

11. Limitations

This report has been prepared by GHD for Hunter Water Corporation (Hunter Water) and may only be used and relied on by Hunter Water for the purpose agreed between GHD and the Hunter Water as set out in Section 1.4 of this report.

GHD otherwise disclaims responsibility to any person other than Hunter Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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

The opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the date of preparation of the Report. GHD has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared. Specifically, this Report does not take into account the effects, implications and consequences of or responses to COVID-19, which is a highly dynamic situation and rapidly changing. These effects, implications, consequences of and responses to COVID-19 may have a material effect on the opinions, conclusions, recommendations, assumptions, qualifications and limitations in this Report, and the entire Report must be re-examined and revisited in light of COVID-19. Where this Report is relied on or used without obtaining this further advice from GHD, to the maximum extent permitted by law, GHD disclaims all liability and responsibility to any person in connection with, arising from or in respect of this Report whether such liability arises in contract, tort (including negligence) or under statute.

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

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

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are 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.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

12. References

AECOM, 2017a, Temporary Desalination Project Readiness Activities Stage 1 Belmont Conceptual Hydrogeological Model, Document Reference 60515293_Belmont CSM RPT_Rev 1.

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NSW EPA (2015). Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997, 2015.

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RCA, 2002, Upgrade of Belmont WWTW, Document Reference 566b-033/0.

SKM, 2012, Spoil Investigation Report, Document Reference EN03103-N-CL-RP-0002.

Appendices

Appendix A – Figures

Paper Size ISO A4

0 190 380 570 760

Metres

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

N

Hunter Water Corporation
Belmont Temporary Desalination Plant Design and EA
Detailed Site Investigation

Project No. **22-19573**
Revision No. **A**
Date **29/09/2020**

Site Locality Plan

Figure 1

G:\22\19573\Design\04 Deliverables\02 Other\2219573_DSI_Variation_A.aprx
Print date: 30 Sep 2020 - 11:27

Data source: LPI: DTDB / DCDB, 2017; public_NSW_Imagery: © Department of Customer Service 2020. Sampling locations digitised from image - for visual purposes only. Created by: tmorton

Paper Size ISO A4

0 90 180 270 360

Metres

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

N

Hunter Water Corporation
Belmont Temporary Desalination Plant Design and EA
Detailed Site Investigation

Project No. **22-19573**
Revision No. **A**
Date **30/09/2020**

Amended Project Area

Figure 2

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Data source: LPI: DTDB / DCDB, 2017; public_NSW_Imagery: © Department of Customer Service 2020. Sampling locations digitised from image - for visual purposes only. Created by: tmorton

Paper Size ISO A4

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Metres

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

N

Hunter Water Corporation
Belmont Temporary Desalination Plant Design and EA
Detailed Site Investigation

Contamination Sampling Plan – Current and Previous Investigations

Project No. **22-19573**
Revision No. **A**
Date **30/09/2020**

Figure 3

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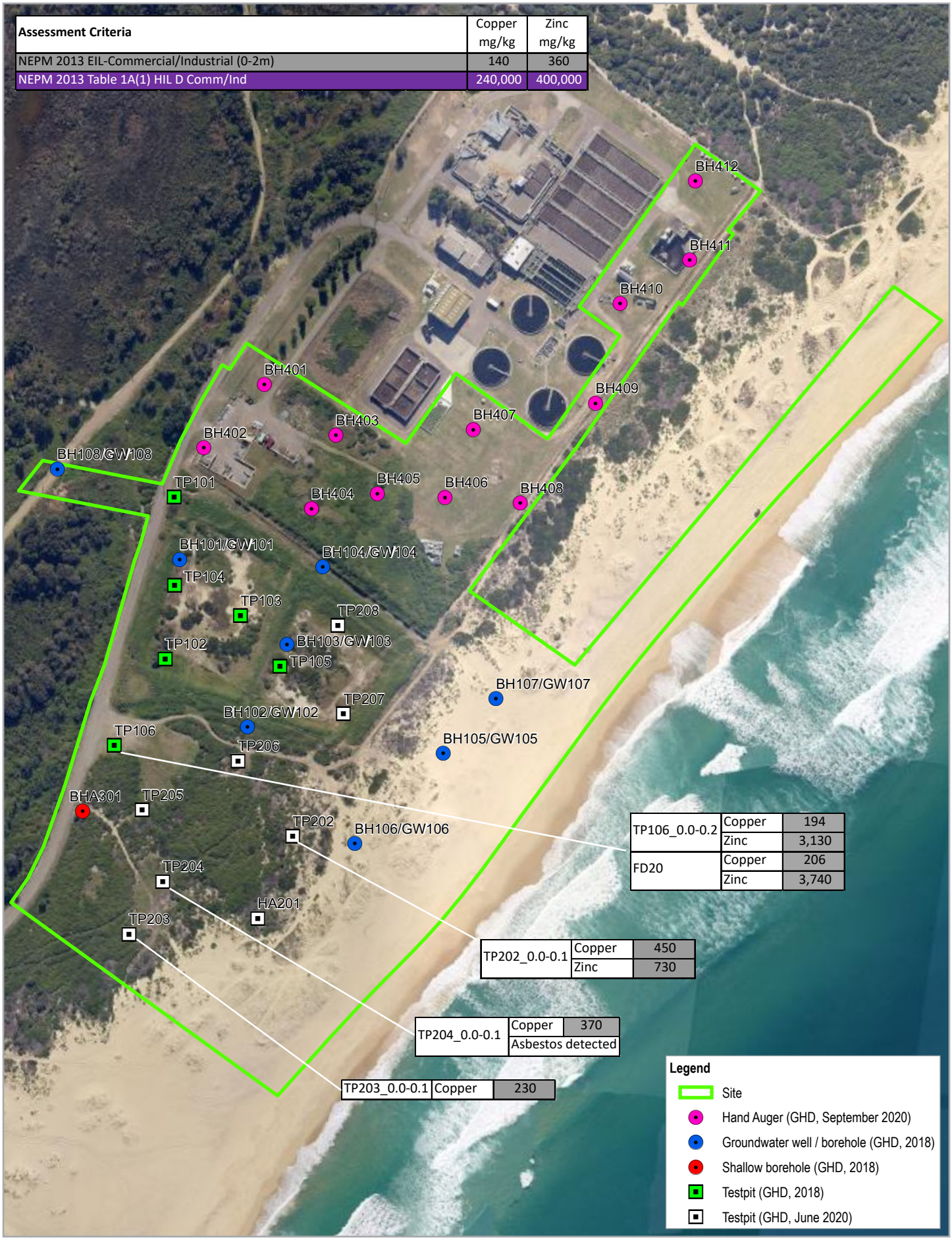
Print date: 30 Sep 2020 - 11:28

Data source: LPI: DTDB / DCDB, 2017; public_NSW_Imagery: © Department of Customer Service 2020. Sampling locations digitised from image - for visual purposes only. Created by: tmorton



Assessment Criteria	Copper mg/kg	Zinc mg/kg
NEPM 2013 EIL-Commercial/Industrial (0-2m)	140	360
NEPM 2013 Table 1A(1) HIL D Comm/Ind	240,000	400,000

TP106_0.0-0.2	Copper	194
	Zinc	3,130
FD20	Copper	206
	Zinc	3,740

TP202_0.0-0.1	Copper	450
	Zinc	730

TP204_0.0-0.1	Copper	370
	Asbestos detected	

TP203_0.0-0.1	Copper	230

Paper Size ISO A4

0 30 60 90 120

Metres

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

N

Hunter Water Corporation
Belmont Temporary Desalination Plant Design and EA
Detailed Site Investigation

Project No. **22-19573**
Revision No. **A**
Date **30/09/2020**

Exceedances of criteria

Figure 4

G:\22\19573\Design\04 Deliverables\02 Other\2219573_DSI_Variation_A.aprx
Print date: 30 Sep 2020 - 16:08

Data source: LPI: DTDB / DCDB, 2017; public_NSW_Imagery: © Department of Customer Service 2020. Sampling locations digitised from image - for visual purposes only. Created by: tmorton

Appendix B – Historical aerial photographs

NSW4309 (M2029) Lake Macquarie City Council Run 8 19-5-1996

Lake Macquarie NSW3730 25-4-1990

BHPB Engineering 1987

Newcastle Run 16 4/9/1983

Lake Macquarie Run 1 27/5/1975

Northumberland Project Run 8 22/08/1965

Appendix C – Borehole logs

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE HA201

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. -
Driller -
Rig Type -
Drill Method Hand Auger
Total Depth (m) 0.4
Diameter (mm) 50

Easting -33.050570539198816
Northing 151.66852447204292
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	HA	0.6	HA201_0.0-0.1 (FD03)			SW - SAND, medium to coarse grained, dark brown-grey, well graded with gravel, roots and shell (FILL).	M	L	no odour no staining.	
0.02										-0.02
0.04										-0.04
0.06										-0.06
0.08										-0.08
0.1						SP - SAND, medium to coarse grained, poorly graded, dark brown- yellow, with gravel, and shells (NATURAL - SOIL).	SM	L	no odour no staining.	-0.1
0.12										-0.12
0.14										-0.14
0.16										-0.16
0.18										-0.18
0.2		0.4	HA201_0.2-0.3							-0.2
0.22										-0.22
0.24										-0.24
0.26										-0.26
0.28										-0.28
0.3										-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. Hang Auger test pit collapse.				-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, 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 TP202

Page 1 of 1

Client John Holland Pty Ltd	**Drill Co.** Justin Ridley Excavations	**Easting** -33.04988959338516
Project Supplementary Geotechnical and Contamination Assessmen	**Driller** Anthony Fahey	**Northing** 151.66854525916278
Project No. 12520831	**Rig Type** Kobelco SK55SRX Excavator	**Grid Ref** GDA94_MGA_zone_56
Site Belmont Temporary Desalination Plant	**Drill Method** Bucket Excavation	**Elevation**
Location Ocean Park Drive, Belmont NSW	**Total Depth (m)** 1.1	**Logged By** A.B
Date Drilled 10/06/2020	**Width (m)** 1.0	**Checked By** K.W

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)
	BE	0.4	TP202_0.0-0.1			SW - SAND, angular, dark brown, with gravel, and roots (FILL).	M	L	no odour no staining - potential slag on surface	
0.05										-5.000
0.1										-0.1
0.15										-0.15
0.2		0.2	TP202_0.2-0.3			SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel, and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.2
0.25										-0.25
0.3										-0.3
0.35										-0.35
0.4										-0.4
0.45										-0.45
0.5		0.2	TP202_0.5-0.6							-0.5
0.55										-0.55
0.6										-0.6
0.65										-0.65
0.7										-0.7
0.75										-0.75
0.8										-0.8
0.85										-0.85
0.9						SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel, and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.9
0.95										-0.95
1		0.2	TP202_1.0-1.1	▽						-1
1.05										-1.05
1.1						Termination Depth at: 1.10 m. Test pit collapse.				-1.1
1.15										-1.15

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, 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 TP203

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 1.3
Width (m) 1.0

Easting -33.05039669852704
Northing 151.66770656593144
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	0.6	TP204_0.0-0.1			SW - SAND, angular, dark brown, well graded with gravel, and roots (FILL).	M	D	no odour no staining.	
0.1						SP - SAND, medium to coarse grained, poorly graded, dark grey, with gravel (FILL).	SM	L	no odour no staining.	-0.1
0.2		0.4	TP203_0.2-0.3 (FD02)							-0.2
0.3										-0.3
0.4										-0.4
0.5		0.4	TP203_0.5-0.6			SP - SAND, medium to coarse grained, poorly graded, pale grey, with fine gravel, and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		0.7	TP203_1.0-1.1							-1
1.1										-1.1
1.2				∇		SP - SAND, medium to coarse grained, poorly graded, dark brown, with: shells (NATURAL - SOIL).	W	D	no odour no staining.	-1.2
1.3						Termination Depth at: 1.30 m. Test pit collapse.				-1.3

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, 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 TP204

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 1.6
Width (m) 1.0

Easting -33.05062707513571
Northing 151.66743490844965
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	0.5	TP204_0.0-0.1			SW - SAND, angular, dark brown, well graded with gravel, and roots (FILL).	M	D	no odour no staining.	
0.1						SP - SAND, medium to coarse grained, poorly graded, dark grey, with gravel (FILL).	M	L	no odour no staining.	-0.1
0.2		0.5	TP204_0.2-0.3							-0.2
0.3										-0.3
0.4										-0.4
0.5		0.3	TP204_0.5-0.6			SP - SAND, medium to coarse grained, poorly graded, pale grey, with fine gravel and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		0.4	TP204_1.0-1.1							-1
1.1										-1.1
1.2				∇		SP - SAND, medium to coarse grained, poorly graded, dark brown, with shells (NATURAL - SOIL).	W	D	no odour no staining.	-1.2
1.3										-1.3
1.4										-1.4
1.5		0.4	TP204_1.5-1.6							-1.5
1.6						Termination Depth at: 1.60 m. Test pit collapse.				-1.6

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, 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 TP205

Page 1 of 1

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 1.6
Width (m) 1.0

Easting -33.049070220440626
Northing 151.6554230544716
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	1.0	TP205_0.0-0.1			CH - Sandy CLAY, high plasticity, angular, brown, with gravel and roots (FILL).	M	D	no odour no staining.	
0.1						SW - Clayey SAND, medium to coarse grained, well graded, angular, brown, with coal, and gravel, concrete and bitumen (FILL).	M	S	no odour no staining.	-0.1
0.2										-0.2
0.3						SP - SAND, medium to coarse grained, poorly graded, brown, with shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.3
0.4										-0.4
0.5		1.2	TP205_0.5-0.6 (FD01)							-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		1.2	TP205_1.0-1.1							-1
1.1										-1.1
1.2						SP - SAND, medium to coarse grained, poorly graded, pale brown, with shells (NATURAL - SOIL).	M	L	no odour no staining.	-1.2
1.3										-1.3
1.4										-1.4
1.5		0.9	TP205_1.5-1.6							-1.5
1.6						Termination Depth at: 1.60 m. Test pit collapse.				-1.6

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, 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 TP206

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 1.6
Diameter (m) 1.0

Easting -33.0507026379928
Northing 151.66758159175515
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	0.7	TP206_0.0-0.1			SW - SAND, angular, dark brown, well graded with gravel, and roots (FILL).	M	D	no odour no staining.	
0.1						SW - Clayey SAND, medium to coarse grained, well graded, dark grey, with gravel (FILL).	M	L	no odour no staining.	-0.1
0.2		1.1	TP206_0.2-0.3							-0.2
0.3										-0.3
0.4										-0.4
0.5		0.9	TP206_0.5-0.6			SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		0.9	TP206_1.0-1.1							-1
1.1										-1.1
1.2										-1.2
1.3										-1.3
1.4						CH - Sandy CLAY, high plasticity, medium to coarse grained, dark black, with roots (NATURAL - SOIL).	M	VD	organic odour no staining.	-1.4
1.5		1.3	TP206_1.5-1.6							-1.5
1.6						Termination Depth at: 1.60 m. Test pit collapse.				-1.6

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, 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 TP207

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 0.3
Width (m) 1.0

Easting -33.049407214885764
Northing 151.66889612562954
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	0.4	TP207_0.0-0.1			SP - SAND, medium to coarse grained, poorly graded, brown- grey, with fine gravel, and shells (NATURAL - SOIL).	M	L	no odour no staining.	
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	TP207_0.2-0.3 (FD04)			SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel and shells (NATURAL - SOIL).	W	L	no odour no staining.	-0.2
0.22										-0.22
0.24										-0.24
0.26										-0.26
0.28										-0.28
0.3				∇		Termination Depth at: 0.30 m. waterlogging of test pit.				-0.3

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, 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 TP208

Page 1 of 1

Client John Holland Pty Ltd
Project Supplementary Geotechnical & Contamination Assessment
Project No. 12520831
Site Belmont Temporary Desalination Plant
Location Ocean Park Drive, Belmont NSW
Date Drilled 10/06/2020

Drill Co. Justin Ridley Excavations
Driller Anthony Fahey
Rig Type Kobelco SK55SRX Excavator
Drill Method Bucket Excavation
Total Depth (m) 1.1
Width (m) 1.0

Easting -33.04872706532478
Northing 151.6687831375748
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By A.B
Checked By K.W

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)
	BE	0.4	TP208_0.0-0.1 (FD05)			SP - SAND, medium to coarse grained, poorly graded, brown- grey, with fine gravel, and shells and roots (FILL).	M	L	no odour no staining.	
0.05										-5.000
0.1										-0.1
0.15										-0.15
0.2		0.2	TP208_0.2-0.3			SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel and shells (NATURAL - SOIL).	M	L	no odour no staining.	-0.2
0.25										-0.25
0.3				▽						-0.3
0.35										-0.35
0.4										-0.4
0.45										-0.45
0.5		0.2	TP208_0.5-0.6							-0.5
0.55										-0.55
0.6										-0.6
0.65										-0.65
0.7						SP - SAND, medium to coarse grained, poorly graded, brown- yellow, with fine gravel and shells (NATURAL - SOIL).	W	L	no odour no staining.	-0.7
0.75										-0.75
0.8										-0.8
0.85										-0.85
0.9										-0.9
0.95										-0.95
1		0.2	TP208_1.0-1.1			SP - Silty SAND, fine to medium grained, black (NATURAL - SOIL).	W	VS	no odour no staining.	-1
1.05										-1.05
1.1						Termination Depth at: 1.10 m. Target depth achieved.				-1.1
1.15										-1.15

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, 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 BH401

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0472727213055
Northing 151.668251305819
Grid Ref GDA94_MGA_zone_55
Elevation (m) 3.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SW - Clayey SAND, well graded, brown, with roots, and gravel (FILL).	SM	L	no staining, slight hydrocarbon odour.	
0.05									2.95
0.1									2.9
0.15									2.85
0.2		18.2	BH401_0.2-0.3						2.8
					SP - SAND, poorly graded, pale brown- grey (NATURAL - SOIL).	M	S	no staining, no odour.	
0.25									2.75
0.3									2.7
0.35									2.65
0.4									2.6
0.45									2.55
0.5									2.5
0.55									2.45
0.6		9.1	BH401_0.5-0.6 (FD01)						2.4
0.65									2.35
0.7									2.3
0.75									2.25
0.8									2.2
0.85									2.15
0.9									2.1
0.95									2.05
1									2
1.05									1.95
1.1		6.6	BH401_1.0-1.1						1.9
					Termination Depth at: 1.10 m. Target depth achieved.				
1.15									1.85

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, 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 BH402

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0476605100557
Northing 151.667992891744
Grid Ref GDA94_MGA_zone_55
Elevation (m) 3.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				GW - Sandy GRAVEL, coarse grained, well graded, angular to subangular, pale brown, with clay, and roots (FILL).	D	VL	no staining, slight hydrocarbon odour.	
0.05									2.95
0.1									2.9
0.15									2.85
0.2									2.8
0.25									2.75
0.3		10.4	BH402_0.2-0.3						2.7
0.35									2.65
0.4									2.6
0.45									2.55
0.5									2.5
0.55									2.45
0.6		8.5	BH402_0.5-0.6		SW - Clayey SAND, well graded, brown, with roots, and gravel (FILL).	SM	L	no staining, no odour.	2.4
0.65									2.35
0.7									2.3
0.75									2.25
0.8					SP - SAND, poorly graded, dark brown (NATURAL - SOIL).	M	S	no staining, no odour.	2.2
0.85									2.15
0.9									2.1
0.95									2.05
1									2
1.05									1.95
1.1		8.5	BH402_1.0-1.1						1.9
					Termination Depth at: 1.10 m. Target depth achieved.				
1.15									1.85

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, 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 BH403

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.047581971623
Northing 151.66886662133
Grid Ref GDA94_MGA_zone_55
Elevation (m) 4.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SW - Clayey SAND, well graded, brown, with roots, and gravel (FILL).	SM	L	no staining, no odour.	
0.05									3.95
0.1									3.9
0.15									3.85
0.2									3.8
					SP - SAND, poorly graded, pale brown- grey (NATURAL - SOIL).	M	S	no staining, organic odour.	
0.25									3.75
0.3		13.6	BH403_0.2-0.3						3.7
0.35									3.65
0.4									3.6
0.45									3.55
0.5									3.5
0.55									3.45
0.6		12.4	BH403_0.5-0.6						3.4
0.65									3.35
0.7									3.3
0.75									3.25
0.8									3.2
0.85									3.15
0.9									3.1
0.95									3.05
1									3
1.05									2.95
1.1		7.6	BH403_1.0-1.1						2.9
					Termination Depth at: 1.10 m. Target depth achieved.				
1.15									2.85

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, 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 BH404

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0478189699352
Northing 151.668864609674
Grid Ref GDA94_MGA_zone_55
Elevation (m) 4.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SW - Clayey SAND, well graded, brown, with roots, and gravel (FILL).	SM	L	no staining, slight hydrocarbon odour.	
0.05									3.95
0.1									3.9
0.15									3.85
0.2									3.8
					SW - Clayey SAND, well graded, brown, with roots, and gravel (FILL).	SM	L	no staining, no odour.	
0.25									3.75
0.3		97.2	BH404_0.2-0.3						3.7
0.35									3.65
0.4									3.6
0.45									3.55
0.5									3.5
0.55									3.45
0.6		3.5	BH404_0.5-0.6						3.4
					SP - SAND, poorly graded, pale brown- grey (NATURAL - SOIL).	M	S	no staining, organic odour.	
0.65									3.35
0.7									3.3
0.75									3.25
0.8									3.2
0.85									3.15
0.9									3.1
0.95									3.05
1									3
1.05									2.95
1.1		9.3	BH404_1.0-1.1						2.9
					Termination Depth at: 1.10 m. Target depth achieved.				
1.15									2.85

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, 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 BH405

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 0.8
Diameter (mm) 50

Easting -33.0478757154197
Northing 151.669258307666
Grid Ref GDA94_MGA_zone_55
Elevation (m) 5.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SW - Gravelly SAND, well graded, brown, with roots, gravel, concrete and brick (FILL).	SM	L	no staining, no odour.	
0.05									4.95
0.1									4.9
0.15									4.85
0.2									4.8
0.25									4.75
0.3		12.4	BH405_0.2-0.3 (FD02)						4.7
0.35									4.65
0.4									4.6
0.45									4.55
0.5									4.5
0.55									4.45
0.6		7.7	BH405_0.5-0.6						4.4
0.65									4.35
0.7									4.3
0.75									4.25
0.8					Termination Depth at: 0.80 m. Refusal on concrete debris.				4.2

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, 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 BH406

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 08/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0479203909636
Northing 151.669743787497
Grid Ref GDA94_MGA_zone_55
Elevation (m) 7.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SW - Gravelly SAND, well graded, brown, with roots, gravel, concrete and brick (FILL).	SM	L	no staining, no odour.	
0.05									6.95
0.1									6.9
0.15									6.85
0.2									6.8
0.25									6.75
0.3		11.9	BH406_0.2-0.3 (FD03)						6.7
0.35									6.65
0.4					SP - Clayey SAND, medium to coarse grained, poorly graded, pale brown- grey with gravel and black clay inclusions (POSSIBLE FILL).	M	MD	no staining, no odour.	6.6
0.45									6.55
0.5									6.5
0.55									6.45
0.6		10.3	BH406_0.5-0.6						6.4
0.65									6.35
0.7									6.3
0.75									6.25
0.8					SP - SAND, medium to coarse grained, poorly graded, pale black- brown (NATURAL - SOIL).	M	MD	no staining, no odour.	6.2
0.85									6.15
0.9									6.1
0.95									6.05
1									6
1.05									5.95
1.1		9.4	BH406_1.0-1.1						5.9
					Termination Depth at: 1.10 m. Target depth achieved.				
1.15									5.85

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, 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 BH407

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger & LH shovel
Drill Method HE, HA
Total Depth (m) 1.1
Diameter (mm) 200

Easting -33.0475674709305
Northing 151.670033382252
Grid Ref GDA94_MGA_zone_55
Elevation (m) 7.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HE				SW - Gravelly SAND, fine to medium grained, well graded, brown, with roots, and gravel, ceramic, concrete, charcoal and brick (FILL).	D	D	no staining, no odour.	
0.05									6.95
0.1									6.9
0.15									6.85
0.2									6.8
0.25									6.75
0.3		3.2	BH407_0.2-0.3 (FD04)						6.7
0.35									6.65
0.4									6.6
0.45									6.55
0.5	HA								6.5
0.55									6.45
0.6		0.4	BH407_0.5-0.6						6.4
0.65									6.35
0.7									6.3
0.75									6.25
0.8									6.2
0.85									6.15
0.9					SP - SAND, medium to coarse grained, poorly graded, brown, with trace gravel (NATURAL - SOIL).	M	S	no staining, no odour.	6.1
0.95									6.05
1		3.0	BH407_1.0-1.1						6
1.05									5.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				5.9
1.15									5.85

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, 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 BH408

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0480260867625
Northing 151.670033382252
Grid Ref GDA94_MGA_zone_55
Elevation (m) 7.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SP - SAND, medium to coarse grained, poorly graded, brown- grey, with roots, and trace gravel (FILL).	D	L	no staining, no odour.	
0.05									6.95
0.1									6.9
0.15									6.85
0.2					SP - SAND, medium to coarse grained, poorly graded, brown- grey, with trace gravel (NATURAL - SOIL).	D	L	no staining, no odour.	6.8
0.25									6.75
0.3		3.4	BH408_0.2-0.3						6.7
0.35									6.65
0.4									6.6
0.45									6.55
0.5									6.5
0.55									6.45
0.6		2.5	BH408_0.5-0.6						6.4
0.65									6.35
0.7									6.3
0.75									6.25
0.8									6.2
0.85									6.15
0.9									6.1
0.95									6.05
1		1.1	BH408_1.0-1.1						6
1.05									5.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				5.9
1.15									5.85

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, 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 BH409

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.0474428739399
Northing 151.670828321949
Grid Ref GDA94_MGA_zone_55
Elevation (m) 7.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SP - SAND, fine to medium grained, poorly graded, brown, with roots (FILL).	D	L	no staining, no odour.	
0.05									6.95
0.1									6.9
0.15									6.85
0.2									6.8
0.25									6.75
0.3		2.5	BH409_0.2-0.3		SP - SAND, medium to coarse grained, poorly graded, pale brown, with trace gravel (NATURAL - SOIL).	M	S	no staining, no odour.	6.7
0.35									6.65
0.4									6.6
0.45									6.55
0.5									6.5
0.55									6.45
0.6		2.2	BH409_0.5-0.6						6.4
0.65									6.35
0.7									6.3
0.75									6.25
0.8									6.2
0.85									6.15
0.9									6.1
0.95									6.05
1		2.8	BH409_1.0-1.1						6
1.05									5.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				5.9
1.15									5.85

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, 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 BH410

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger & LH shovel
Drill Method HE, HA
Total Depth (m) 1.1
Diameter (mm) 200

Easting -33.046904001385
Northing 151.671206261963
Grid Ref GDA94_MGA_zone_55
Elevation (m) 7.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HE				SW - Gravelly SAND, fine to medium grained, well graded, brown, with roots, and gravel, concrete, charcoal and brick (FILL).	D	D	no staining, no odour.	
0.05									6.95
0.1									6.9
0.15									6.85
0.2									6.8
0.25									6.75
0.3		2.5	BH410_0.2-0.3		SP - SAND, medium to coarse grained, poorly graded, brown, with trace gravel (NATURAL - SOIL).	M	S	no staining, no odour.	6.7
0.35									6.65
0.4									6.6
0.45									6.55
0.5	HA								6.5
0.55									6.45
0.6		2.2	BH410_0.5-0.6						6.4
0.65									6.35
0.7									6.3
0.75									6.25
0.8									6.2
0.85									6.15
0.9									6.1
0.95									6.05
1		2.8	BH410_1.0-1.1						6
1.05									5.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				5.9
1.15									5.85

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, 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 BH411

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger
Drill Method HA
Total Depth (m) 1.1
Diameter (mm) 50

Easting -33.046463993378
Northing 151.671206261963
Grid Ref GDA94_MGA_zone_55
Elevation (m) 6.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HA				SP - SAND, fine to medium grained, poorly graded, brown, with roots (FILL).	D	L	no staining, no odour.	
0.05									5.95
0.1									5.9
0.15									5.85
0.2									5.8
0.25									5.75
0.3		1.6	BH411_0.2-0.3						5.7
0.35									5.65
0.4					SW - Clayey SAND, medium to coarse grained, well graded, dark brown, with gravel (POSSIBLE NATURAL - SOIL).	M	D	no staining, no odour.	5.6
0.45									5.55
0.5									5.5
0.55									5.45
0.6		2.3	BH411_0.5-0.6		SP - SAND, medium to coarse grained, poorly graded, brown, with trace gravel (NATURAL - SOIL).	M	S	no staining, no odour.	5.4
0.65									5.35
0.7									5.3
0.75									5.25
0.8									5.2
0.85									5.15
0.9									5.100
0.95									5.050
1		0.7	BH411_1.0-1.1						5.000
1.05									4.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				4.9
1.15									4.850

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, 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 BH412

Client Hunter Water Corporation
Project Belmont Temporary Desalination Plant Design
Project No. 2219573
Site Belmont Temporary Desalination Plant
Location Ocean Park Road, Belmont NSW 2280
Date Drilled 09/09/2020

Drill Co. -
Driller AB
Equipment 50 mm hand auger & LH shovel
Drill Method HE, HA
Total Depth (m) 1.1
Diameter (mm) 200

Easting -33.0459656473249
Northing 151.671762317419
Grid Ref GDA94_MGA_zone_55
Elevation (m) 6.0
Logged By AB
Checked By KW

Depth (m)	Drilling Method	PID (ppm)	Sample ID	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)
	HE				SW - Gravelly SAND, fine to medium grained, well graded, brown, with roots, and gravel and charcoal (FILL).	D	D	no staining, no odour.	
0.05									5.95
0.1									5.9
0.15									5.85
0.2									5.8
0.25									5.75
0.3		1.7	BH412_0.2-0.3						5.7
	HA				SP - SAND, medium to coarse grained, poorly graded, brown, with trace gravel (NATURAL - SOIL).	M	S	no staining, no odour.	
0.35									5.65
0.4									5.6
0.45									5.55
0.5									5.5
0.55									5.45
0.6		2.2	BH412_0.5-0.6						5.4
0.65									5.35
0.7									5.3
0.75									5.25
0.8									5.2
0.85									5.15
0.9									5.100
0.95									5.050
1		4.6	BH412_1.0-1.1						5.000
1.05									4.95
1.1					Termination Depth at: 1.10 m. Target depth achieved.				4.9
1.15									4.850

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, 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

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. BH301

SHEET 1 OF 1

Position : 376642.0 E 6344656.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** RCO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 30/8/2018	**Date Completed :** 30/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
	AD/T	Nil		Dx3 Dx2 Dx3 D	0.70		-	FILL, Silty SAND, dark grey, fine to coarse grained, with fine to coarse, sub-rounded to sub-angular gravel, trace coal fragments, (fill). 0.40m, becoming brown, gravel becoming fine to medium.	D D-M	-	
1				SPT 25 for 20mm N=ref Dx3 D SPT 11/14/14 N=28 D	2.70		SW	SAND, grey, fine to coarse grained, (marine/estuarine?).	D-M	VD	
2			2.1m	D D D SPT 2/4/7 N=11 D	3.50		SM	Silty SAND, dark brown, fine to coarse grained, (marine/estuarine?).	W W	MD MD	
3				D D D SPT 3/5/9 N=14 D	5.00		SW	SAND, grey, fine to coarse grained, trace of silt, (marine/estuarine?).	W	MD	
4											
5				D				End of borehole at 5 metres. Target Depth			
6											
7											
8											

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation			**HOLE No. GW101/BH101**
Project : Belmont Temporary Desalination Plant			**SHEET 1 OF 3**
Location : Belmont, WWTP, NSW			
Position : 375613.0 E 6342563.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 29/8/2018	**Date Completed :** 29/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
				Dx3	0.02		SW	SAND, dark grey, fine to coarse grained, with silt, (topsoil).	D	-			Monument cover, well cap @ 0.95m agl Concrete
				Dx2			SW	SAND, pale yellow brown, fine to coarse grained, (aeolian). 0.49-0.50m, dark grey, silty sand layer. 0.50m, trace fine, sub-rounded gravel.	D-M	MD			
				Dx2					M				
1			0.95m	D SPT 2/3/4 N=7	0.90		SM	Silty SAND, dark grey, fine to coarse grained, (fill/alluvium).	W	-			
				Dx2	1.20		SW	SAND, grey, fine to coarse grained, (marine?).	W	MD			
				D SPT 3/3/5 N=8									
				D									
2	AD/T	Nil											Backfill
				D SPT 3/4/6 N=10									
3													50mm PVC casing
4										D			
				D SPT 6/9/12 N=21									Bentonite
													5 mm Specialised Sand Backfill
5													
	Hollow Flight Auger			SPT 2/7/10 N=17									
6													
7										VD			
				D SPT 10/20/25 N=45									
8													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont, WWTP, NSW

HOLE No. GW101/BH101

SHEET 2 OF 3

Position : 375613.0 E 6342563.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 29/8/2018	**Date Completed :** 29/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
							SW	SAND, as previous.	W	VD			5 mm Specialised Sand Backfill
9													
10				SPT 8/15/25 for 120mm N=ref									
11													
12	Hollow Flight Auger												50mm PVC Screen Pipe
13				SPT 5/12/21 N=33									5 mm Specialised Sand Backfill
14													
15													
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

HOLE No. GW101/BH101

SHEET 3 OF 3

Client : Hunter Water Corporation			
Project : Belmont Temporary Desalination Plant			
Location : Belmont, WWTP, NSW			
Position : 375613.0 E 6342563.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 29/8/2018	**Date Completed :** 29/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			D SPT 7/16/25 for 135mm N=ref	16.30		SW	SAND, as previous.	W	VD			
17					17.50		SW	SAND, grey, fine to coarse grained, trace clay, (estuarine/marine?).	W	VD			
18							SW	SAND, grey, fine to coarse grained, trace of fine grained, sub-rounded gravel, (marine/estuarine?).	W	VD			5 mm Specialised Sand Backfill
19				D SPT 8/16/25 for 125mm N=ref									
20					20.00			End of borehole at 20 metres.					Base of piezo @ 20m bgl
21													
22													
23													
24													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW102/BH102

SHEET 1 OF 3

Position : 375661.0 E 6342448.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 15/8/2018	**Date Completed :** 15/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil		Dx3 Dx2			-	FILL, SAND, brown to grey, fine to coarse grained, with silt, abundant rootlets, trace plastic(band aid), (fill).	D	-			Monument cover, well cap @ 1.0 m agl Concrete Bentonite
				Dx2 D SPT 2/3/4 N=7	0.80		SW	FILL, SAND, pale yellow brown, fine to coarse grained, trace wire, (fill).	D	-			
1				D D SPT 3/4/5 N=9	1.30		SW	SAND, pale yellow brown, fine to coarse, (aeolian).	D	MD			
				Dx2	1.70		SW	SAND, brown to grey, fine to coarse grained, with silt (alluvium).	M	MD			
2			▽ 2.3m						W				
				SPT 3/3/4 N=7	2.70		SW	SAND, grey, fine to coarse grained, trace of shells (marine?).	W	MD			50mm PVC casing Backfill
3													
4				D SPT 3/5/7 N=12						MD-D			
5													
6	Hollow Flight Auger			D SPT 2/3/4 N=7									Bentonite 5 mm Specialised Sand Backfill
7				D SPT 3/13/22 N=35						VD			
8													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW102/BH102

SHEET 2 OF 3

Position : 375661.0 E 6342448.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 15/8/2018	**Date Completed :** 15/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			D D SPT 5/13/20 N=33 D SPT 5/20/25 for 110mm N=ref D			SW	SAND, as previous.	W	VD			5 mm Specialised Sand Backfill 5 mm Specialised Sand Backfill 50mm PVC Screen Pipe

9
10
11
12
13
14
15
16

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW102/BH102

SHEET 3 OF 3

Position : 375661.0 E 6342448.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 15/8/2018	**Date Completed :** 15/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			D SPT 7/18/25 for 90mm N=ref			SW	SAND, as previous.	W	VD			
17													
				D									
18													5 mm Specialised Sand Backfill
19					19.00		SW	SAND, pale grey, fine to coarse grained, trace fines (clay), (marine/estuarine?)	W	VD			
				D SPT 14/24/25 for 120mm N=ref									
20													
21													
22					22.00			End of borehole at 22 metres. Target Depth					Base of piezo @ 21.9m bgl
23													
24													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation			**HOLE No. GW103/BH103**
Project : Belmont Temporary Desalination Plant			**SHEET 1 OF 6**
Location : Belmont WWTP, NSW			
Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil	▽ 1.3m	Dx3 Dx2			SW	SAND, pale yellow brown, fine to coarse grained, (aeolian).	D	-			Monument cover, well cap @ 0.8m agl Concrete Concrete
					0.50								
1				Dx2 D SPT 2/1/3 N=4 Dx2 D SPT 2/3/3 N=6 Dx2			SM	Silty SAND, dark grey to brown, fine to coarse grained, organic odour, (alluvium). 0.70m, minor zones of sand, trace of silt.	M W	MD			
					1.80								
2							SW	SAND, grey fine to coarse grained, (marine?).	W	MD			Backfill 50mm PVC casing
3				D SPT 3/5/6 N=11									
4				D SPT 5/8/12 N=20						D			
5	Washboring												Bentonite
				D SPT 6/9/12 N=21				5.30-5.35m, trace of fine grained, sub-rounded to rounded gravel.					5 mm Specialised Sand Backfill
6													
7				SPT 7/11/17 N=28									
8													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW103/BH103

Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
							SW	SAND, as previous.	W	VD			5 mm Specialised Sand Backfill
9				D SPT 14/19/25 N=44									
10													
11													
12	Washboring			D SPT 13/21/25 for 145mm N=ref									
13													5 mm Specialised Sand Backfill
14													
15				D SPT 19/25 for 120mm N=ref									
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW103/BH103

SHEET 3 OF 6

Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Washboring			D SPT 24/25 for 110m N=ref			SW	SAND, as previous.	W	VD			
17													
18													5 mm Specialised Sand Backfill 50mm PVC Screen Pipe
19													
20													
21													
22													
23													5 mm Specialised Sand Backfill
24													

See standard sheets for details of abbreviations & basis of descriptions

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW103/BH103

Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
							SW	SAND, as previous.	W	VD			
25													
26													
27													
28	Washboring												5 mm Specialised Sand Backfill
29													
30													Base of piezo @ 30.1 mbgl
31					31.00		CI-CH	CLAY, grey, medium to high plasticity (w>PL), trace charcoal, (estaurine?).	M	VSt			
32													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW103/BH103

Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Washboring			D SPT 8/12/15 N=27			CI-CH	CLAY, as previous.	M	VSt VSt	PP on SPT sample =320-380 kPa		
33													
34													
35													
36													
37													
38													
39													
40													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW103/BH103

Position : 375689.0 E 6342505.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** MAG
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 16/8/2018	**Date Completed :** 16/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
41	Washboring				41.10		CI-CH	CLAY, as previous.	M	VSt VSt			
								End of borehole at 41.1 metres. Target Depth					
42													
43													
44													
45													
46													
47													
48													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 22-19573

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW104/BH104

SHEET 1 OF 3

Position : 375716.0 E 6342557.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 31/8/2018	**Date Completed :** 31/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil		Dx3 Dx2	0.10		-	FILL, Silty SAND, dark grey, fine to coarse grained, (fill).	D	-			Monument cover, well cap @ 1.1m agl Concrete
				Dx2			-	FILL, SAND, brown, fine to coarse grained, trace of silt, (fill).	D	-			
					0.70		SW	SAND, pale yellow brown, fine to coarse grained, (aeolian).	D	MD-D			
1				D SPT 3/4/6 N=10 Dx2 D SPT 5/5/5 N=10					W				
			▽ 1.5m		1.70		SW	SAND, brown, fine to coarse grained, with silt, (estuarine/marine?).	W	MD-D			
2					2.00		SW	SAND, grey, fine to coarse grained, trace of silt, trace of fine grained, sub-rounded gravel, (marine?).	W	MD-D			50mm PVC casing Backfill
3				D SPT 3/4/6 N=10									
4	Hollow Flight Auger			D SPT 4/5/7 N=12									Bentonite
5													
6				D SPT 4/4/5 N=9									
7				D SPT 3/10/18 N=28									
8													

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Job No. 22-19573

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW104/BH104

SHEET 2 OF 3

Position : 375716.0 E 6342557.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 31/8/2018	**Date Completed :** 31/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger						SW	SAND, as previous.	W	MD-D			
9													
10				SPT 3/9/14 N=23									5 mm Specialised Sand Backfill
11													
12													50mm PVC Screen Pipe
13				SPT 6/15/25 for 140mm N=ref						VD			
14													
15													
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW104/BH104

SHEET 3 OF 3

Position : 375716.0 E 6342557.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 31/8/2018	**Date Completed :** 31/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			SPT 7/9/15 N=24			SW	SAND, as previous.	W	MD-D			
17													5 mm Specialised Sand Backfill
18													
19				SPT 10/17/25 for 130mm N=ref						VD			
20					20.00								Base of piezo @ 20.0m
								End of borehole at 20 metres. Target Depth					
21													
22													
23													
24													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

HOLE No. GW105/BH105

SHEET 1 OF 3

Client : Hunter Water Corporation			
Project : Belmont Temporary Desalination Plant			
Location : Belmont WWTP, NSW			
Position : 375798.0 E 6342432.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 28/8/2018	**Date Completed :** 28/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil					SW	SAND, pale yellow brown, fine to coarse grained, (aeolian).	D	MD			Monument cover, well cap @ 0.9m agl Concrete
									M				
1				D SPT 4/5/5 N=10 D SPT 3/2/5 N=7									
2													
3				D SPT 3/4/4 N=8									Backfill 50mm PVC casing
4			▽ 4.1m	D SPT 2/3/3 N=6					W	L-MD			
5													
6				D SPT 2/2/3 N=5									Bentonite
7				D SPT 2/2/4 N=6				SAND, grey, fine to coarse grained, trace of clayey sand lenses, (marine/estuarine?).					
8													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW105/BH105

SHEET 2 OF 3

Position : 375798.0 E 6342432.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 28/8/2018	**Date Completed :** 28/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil					SW	SAND, as previous.	W				
				D				8.5m, becoming dark grey, trace silt.					
9													
								9.5m, becoming grey, no silt.					5 mm Specialised Sand Backfill
10				D SPT 7/17/25 for 140mm N=ref						VD			
11													
12													
13				SPT 10/19/25 for 100mm N=ref									50mm PVC Screen Pipe
14								14.5m, trace of fine grained, sub-rounded to rounded gravel.					5 mm Specialised Sand Backfill
15													
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW105/BH105

SHEET 3 OF 3

Position : 375798.0 E 6342432.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 28/8/2018	**Date Completed :** 28/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
17	AD/T	Nil		SPT 9/20/25 for 110mm N=ref			SW	SAND, as previous.	W	VD			5 mm Specialised Sand Backfill
18													
19				SPT 6/18/25 for 100mm N=ref									
20					20.50								Base of piezo @ 20.5m
								End of borehole at 20.5 metres. Target Depth					
21													
22													
23													
24													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation			**HOLE No. GW106/BH106**
Project : Belmont Temporary Desalination Plant			**SHEET 1 OF 3**
Location : Belmont WWTP, NSW			
Position : 375737.0 E 6342369.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 27/8/2018	**Date Completed :** 27/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil					SW	SAND, pale yellow brown, fine to coarse grained, (aeolian).	M	MD			Monument cover, well cap @ 1.0m agl Concrete
1				D SPT 3/3/3 N=6 D SPT 2/5/4 N=7									
2													
3				D SPT 3/4/5 N=9				SAND, grey, fine to coarse grained, (marine?).					Backfill 50mm PVC casing
4			▽ 4.1m	D SPT 1/1/2 N=3					W	L			
5													
6	Hollow Flight Auger			D SPT 3/3/4 N=7				5.8m, trace silt/clay.		MD			Bentonite
7				D SPT 4/7/10 N=17				7.0m, without fines.		D			
8													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation			**HOLE No. GW106/BH106**
Project : Belmont Temporary Desalination Plant			**SHEET 2 OF 3**
Location : Belmont WWTP, NSW			
Position : 375737.0 E 6342369.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 27/8/2018	**Date Completed :** 27/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
							SW	SAND, as previous.	W	D			
9													
10				D SPT 4/14/25 for 140mm N=ref			SW	10.0m, trace shell fragments.	W	VD			
11													
12	Hollow Flight Auger												
13				SPT 9/21/25 for 80mm N=ref									50mm PVC Screen Pipe
14													5 mm Specialised Sand Backfill
15													
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW106/BH106

SHEET 3 OF 3

Position : 375737.0 E 6342369.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 27/8/2018	**Date Completed :** 27/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations		Piezometer Log	Components
	Hollow Flight Auger			SPT 8/25 for 135mm N=ref			SW	SAND, as previous.	W	VD				5 mm Specialised Sand Backfill
17														
18														
19				SPT 19/25 for 100mm N=ref										
20					20.40 20.50		CI-CH	CLAY, grey, medium to high plasticity, trace fine to medium grained sand, (estuarine?).	M	-				Base of piezo @ 20.5m
21								End of borehole at 20.5 metres. Target Depth						
22														
23														
24														

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation			**HOLE No. GW107/BH107**
Project : Belmont Temporary Desalination Plant			**SHEET 1 OF 3**
Location : Belmont WWTP, NSW			
Position : 375836.0 E 6342470.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 24/8/2018	**Date Completed :** 24/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil					SW	SAND, yellow-brown, fine to coarse grained (aeolian).	D	D			Monument cover, well cap @ 0.9m agl Concrete
1				D SPT 3/5/7 N=12					D-M				
				D SPT 5/6/8 N=14									
2													
3				D SPT 4/6/7 N=13	2.88		SW	SAND, grey, fine to coarse grained, trace of silt, (marine?).	M				Backfill 50mm PVC casing
4			▽ 4.3m	D SPT 3/5/4 N=9					W	MD			
5								5.5m, trace of clayey sand zones, dark grey.					
6				D SPT 3/4/5 N=9				5.8m, becoming yellow brown, trace silt, trace coal/charcoal fragments.					Bentonite 5 mm Specialised Sand Backfill
7				D SPT 2/3/4 N=7				7.0m, becoming pale grey,					
8													

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GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW107/BH107

Position : 375836.0 E 6342470.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 24/8/2018	**Date Completed :** 24/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger						SW	SAND, as previous.	M W	D			
9													
10				D SPT 1/8/19 N=27									
11													
12													
13				D SPT 8/16/25 for 130mm N=ref						VD			50mm PVC Screen Pipe
14													5 mm Specialised Sand Backfill
15													
16													

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW107/BH107

SHEET 3 OF 3

Position : 375836.0 E 6342470.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 24/8/2018	**Date Completed :** 24/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			D SPT 7/15/25 for 130mm N=ref			SW	SAND, as previous.	M	VD			
17													5 mm Specialised Sand Backfill
18													
19				SPT 3/10/21 N=31									
20					20.10								Base of piezo @ 20.5m bgl
								End of borehole at 20.1 metres. Target Depth					
21													
22													
23													
24													

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW108/BH108

SHEET 1 OF 3

Position : 375527.0 E 6342625.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 22/8/2018	**Date Completed :** 22/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	AD/T	Nil	▽ 0.8m	Dx3 Dx2			-	FILL, Sandy GRAVEL, brown, fine to coarse grained, sub-rounded to sub-angular, sand is fine to to coarse grained, with silt, trace of slag (fill).	D M	-			Monument cover, well cap @ 0.8m agl Concrete
				D SPT 5/6/6 N=12	0.70		SM	SAND, brown, fine to coarse grained, with silt (estuarine?).	M W	MD			
1				D SPT 5/6/8 N=14	1.20		SW	SAND, grey, fine to coarse grained (marine?).	W	- MD			Backfill 50mm PVC casing
2													Bentonite
3				D SPT 2/3/3 N=6									5 mm Specialised Sand Backfill
4	Hollow Flight Auger			D SPT 3/4/5 N=9									
5													
6				D SPT 3/4/7 N=11									
7				D SPT 4/11/16 N=27				7.0m, becoming trace of brown zones, trace silt.		D			
8													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 22-19573

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW108/BH108

SHEET 2 OF 3

Position : 375527.0 E 6342625.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 22/8/2018	**Date Completed :** 22/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

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DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
9	Hollow Flight Auger						SW	SAND, as previous.	W	- D			
10				D SPT 8/13 20 N=33	10.20		SW	SAND, brown, fine to coarse grained, trace of silt (marine).	W	D			
11													50mm PVC Screen Pipe
12					11.90		SW	SAND, grey, fine to coarse grained, (marine).	W	- D			
13				D SPT 6/13/21 N=34									
14													
15													
16													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 22-19573

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

Client : Hunter Water Corporation
Project : Belmont Temporary Desalination Plant
Location : Belmont WWTP, NSW

HOLE No. GW108/BH108

SHEET 3 OF 3

Position : 375527.0 E 6342625.0 N	**Surface RL:**	**Angle from Horiz. :** 90°	**Processed :** SBO
Rig Type : Hanjin D&B **Mounting:** Track	**Contractor :** Total Drilling Pty Ltd	**Driller :** M. Sawyer	**Checked :** AWJ
Date Started : 22/8/2018	**Date Completed :** 22/8/2018	**Logged by :** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL								PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
	Hollow Flight Auger			D SPT 9/22/25 for 105mm N=ref			SW	SAND, as previous. 16.4m, trace of orange-brown clayey sand bands.	W	- VD			
17													
18													
19				D SPT 20/25 for 130mm N=ref	19.23		SW	SAND, grey with black speckles, fine to medium grained, trace of clay, (marine/estuarine?).	W	-			
20					20.50								
								End of borehole at 20.5 metres. Target Depth					Base of piezo @ 20.5m
21													
22													
23													
24													

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TEST PIT LOG SHEET

Client:	Hunter Water Corporation	**HOLE No. TP101**	
Project:	Belmont Temporary Desalination Plant		
Location:	Belmont WWTP, NSW	**SHEET** 1 **OF** 1	
Position:	375615.20 E 6342614.00 N	**Surface RL:**	**Processed:** RCO
Method of Exploration:	5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:** AWJ
Date:	06/09/18	**Logged by:** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
		Dx2	0.20		-	FILL, Silty SAND, brown, fine to coarse grained, trace fine to coarse grained, sub-rounded to sub-angular gravel, trace fibro (possible asbestos) fragments, (fill).	D	-	
		Dx2			SP	SAND, yellow brown, fine to coarse grained (aeolian).	D	VL-L	
		B					M		
		Dx2						MD	
1	GNE								
			1.40						
		D			SP	SAND, dark grey, fine to coarse grained, with silt (marine?).	M	VL-L	
			1.60						
		B			SP	SAND, grey, fine to coarse grained (marine?).	M	L-MD	
			2.00						
2						End of test pit at 2 metres. Collapsing to 1.50m.			
3									

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TEST PIT LOG SHEET

Client:	Hunter Water Corporation	**HOLE No. TP102**	
Project:	Belmont Temporary Desalination Plant		
Location:	Belmont WWTP, NSW	**SHEET** 1 **OF** 1	
Position:	375602.19 E 6342493.34 N	**Surface RL:**	**Processed:** RCO
Method of Exploration:	5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:** AWJ
Date:	06/09/18	**Logged by:** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
		Dx2	0.20		-	FILL, SAND, brown to grey, fine to coarse grained, with silt (fill/disturbed).	M	-	
		Dx2	0.40		-	FILL, CLAY, brown, low to medium plasticity, with fine to coarse grained sand, abundant rootlets (fill/disturbed).	M	-	
		B D			SW	SAND, grey, fine to coarse grained, trace of silt, organic odour (marine?).	M W	VL-L	
						0.60m, pale grey, becoming trace of silt.			
	0.8m							L-MD	
1						0.90m, becoming grey.			
		D							
		D				1.50m, becoming brown to grey.			
2		D	2.00			End of test pit at 2 metres. Hole collapsing.			
3									

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Job No. 22-19573

GEO_TEST PIT_AS1726 2017 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

1.5
1.4
1.3
1.2
1.0

TEST PIT LOG SHEET

Client:	Hunter Water Corporation	**HOLE No. TP103**	
Project:	Belmont Temporary Desalination Plant		
Location:	Belmont WWTP, NSW	**SHEET** 1 **OF** 1	
Position:	375657.00 E 6342523.00 N	**Surface RL:**	**Processed:** RCO
Method of Exploration:	5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:** AWJ
Date:	06/09/18	**Logged by:** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
		Dx2 Dx2			SW	SAND, pale yellow brown, fine to coarse grained (aeolian).	D M M-W	VL	
		Dx2	0.50		SW	SAND, dark grey to black, fine to coarse grained, with silt, trace clay (estuarine?)	M-W	VL	
			0.70		SW	SAND, grey to dark grey, fine to coarse grained, trace of silt.	M-W	VL	
1		Dx2						L	
	1.2m						W	MD	
		D							
			1.90			End of test pit at 1.9 metres. Hole caving in to 0.50m.			
2									
3									

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Job No. 22-19573

TEST PIT LOG SHEET

Client:	Hunter Water Corporation	**HOLE No. TP104**	
Project:	Belmont Temporary Desalination Plant		
Location:	Belmont WWTP, NSW	**SHEET** 1 **OF** 1	
Position:	375609.00 E 6342544.00 N	**Surface RL:**	**Processed:** RCO
Method of Exploration:	5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:** AWJ
Date:	06/09/18	**Logged by:** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
			0.02		SM	FILL, Silty SAND, dark grey, fine to coarse grained (fill/topsoil).	D	-	
		Dx3			SW	SAND, pale yellow brown, fine to coarse grained (aeolian).	D	VL-L	
		Dx2							
		B	0.55						
		D			SW	SAND, grey, fine to coarse grained, trace silt, (marine?).	M	VL-L	
		B					W		
1	GNE							L-MD	
		D							
		D						MD	
2		B							
			2.20						
						End of test pit at 2.2 metres. Hole collapsed to 1.20m.			
3									

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Job No. 22-19573

GEO_TEST PIT_AS1726 2017 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

CLIENTS | PEOPLE | PERFORMANCE

Hunter Water Corporation
Belmont Temporary Desalination Plant
GEOTECHNICAL INVESTIGATION
TESTPIT PHOTOGRAPHS – TP104

job no	22/19573
file ref	
scale	N/A
date	06/09/18

TEST PIT LOG SHEET

Client: Hunter Water Corporation

Project: Belmont Temporary Desalination Plant

Location: Belmont WWTP, NSW

HOLE No. TP105

SHEET 1 **OF** 1

Position: 375683.00 E 6342488.00 N	**Surface RL:**	**Processed:**	RCO
Method of Exploration: 5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:**	AWJ
Date: 06/09/18	**Logged by:** D. Cooper	**Date:**	20/09/2018

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Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
		Dx3 Dx2 B			SW	SAND, pale yellow brown, fine to coarse grained (aeolian). 0.45m, becoming grey.	D M W	VL	
		Dx2	0.60		SW	SAND, dark grey to black, fine to coarse grained, with silt, trace clay (marine/estuarine?).	W	VL	
			0.80		SW	SAND, grey, fine to coarse grained (marine?).	W	VL	
1		Dx2						L	
	1.3m	B						L-MD	
			1.60			End of test pit at 1.6 metres. Hole collapsing.		MD	
2									
3									

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 22-19573

GEO_TEST PIT_AS1726 2017 221957302 BELMONT TEMP DP.GPJ GHD_GEO_TEMPLATE.GDT 3/10/18

CLIENTS | PEOPLE | PERFORMANCE

Hunter Water Corporation
Belmont Temporary Desalination Plant
GEOTECHNICAL INVESTIGATION
TESTPIT PHOTOGRAPHS – TP105

job no	22/19573
file ref	
scale	N/A
date	06/09/18

TEST PIT LOG SHEET

Client:	Hunter Water Corporation	**HOLE No. TP106**	
Project:	Belmont Temporary Desalination Plant		
Location:	Belmont WWTP, NSW	**SHEET** 1 **OF** 1	
Position:	375567.00 E 6342433.00 N	**Surface RL:**	**Processed:** RCO
Method of Exploration:	5T Excavator with 450mm bucket	**Hole Size:** 4.0 m x 0.45m	**Checked:** AWJ
Date:	06/09/18	**Logged by:** D. Cooper	**Date:** 20/09/2018

Note: * indicates signatures on original issue of log or last revision of log

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description [COBBLES / BOULDERS / FILL / TOPSOIL] then SOIL NAME: plasticity / primary particle characteristics, colour, secondary and minor components, zoning (origin) and ROCK NAME: Grain size, colour, fabric and texture, inclusions or minor components, durability, strength, weathering / alteration, defects	Moisture Condition	Consistency / Density Index	Comments Observations
		Dx3	0.20		-	FILL, Silty SAND, dark grey, fine to coarse grained, with fine to coarse grained, sub-rounded to sub-angular gravel (gravel comprises fragments of asphalt, concrete, bricks and rock) (fill).	D	-	
		Dx2 D	0.60		-	FILL, CLAY, mottled orange brown and green, medium plasticity, with fine to coarse, sub-rounded to sub-angular gravel (fill).	D	-	
		Dx2	0.75		-	FILL, SAND, grey to brown, fine to coarse grained, with fine to coarse, sub-rounded to sub-angular gravel, trace cobbles up to 180mm diameter (fill).	D	-	
		D D			SW	SAND, pale yellow brown, with brown striations, fine to coarse grained, trace of silt (aeolian).	D-M	VL-L	
1		B						-	
						1.10m, becoming grey.	M	L	
		D				1.25m, becoming yellow brown.			
		B				1.50-1.65m, becoming grey.			
		D	1.80					MD	
2						End of test pit at 1.8 metres. Hole collapsing.			
3									

See standard sheets for details of abbreviations & basis of descriptions

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Job No. **22-19573**

TP106
DEPTH 1.8m
CLIENT H.W.C
PROJECT Belmont Temporary Desal Plant
PROJECT NUMBER 22 19573
LOCATION Belmont WWTP
DATE 6/9/18

Appendix D – Field and laboratory QA/QC program

Overview

QA and QC practices were applied to data gathering and subsequent sample handling procedures. These were designed to provide control over both field and laboratory operations. Additionally, the analytical laboratories completed their own internal QA procedures (as required by NATA registration) during the analysis of samples. Details of the QA/QC program are described below.

Field QC sampling

All fieldwork was conducted in general accordance with the GHD SOP. The SOP ensures that all samples are collected by a set of uniform and systematic methods.

The SOP describes field activities including:

- Implemented decontamination procedures
- Sample identification procedures
- Information requirements for soil logs
- Chain of Custody information requirements
- Sample duplicate frequency

Field Investigation QA/QC results- Soil

Field QA/QC

Field QA/QC procedures used during the proposal comprised:

- **Blind duplicates:** These are prepared in the field by duplicating the original sample and placing two equivalent portions into two separate containers. The duplicate samples are analysed for the identical set of parameters requested for the corresponding original sample. For the blind duplicate sample pairs, relative percentage differences (RPD) are calculated. Blind duplicates provide an indication of the analytical precision of the proposal laboratory, but may also be affected by factors such as sampling methodology, inherent heterogeneity of the sample medium and different laboratory analytical techniques.

Field QC assessment procedure

Assessment of field QC duplicate samples was undertaken by calculating the Relative Percent Difference (RPD) of duplicate samples. For the purposes of this investigation, an RPD value of 30% for inorganics and 50% for organics has been considered appropriate for the assessment of QC results. A result exceeding this value does not necessarily mean the data is invalid, but rather the impact on the data may need to be assessed.

Across the investigations to date, five intra-laboratory duplicates were analysed by ALS and Eurofins which are NATA accredited for the analysis requested. Duplicates and their primary sample pairs are listed below in Table D-1.

Table D-1 Primary and duplicate sample pairs – Soils

Duplicate type	Primary sample	Duplicate	Parameters
Intra-laboratory duplicate	TP106_0.0-0.2	FD20	TRH, BTEX, PAH, heavy metals
	TP205_0.5-0.6	FD10	
	TP208_0.0-0.1	FD05	
	BH406_0.2-0.3	FD03	
	BH407_0.2-0.3	FD04	Heavy metals

RPDs were calculated for intra-laboratory duplicate samples as part of the QA/QC program. RPDs are presented in Table C, Appendix E. Generally, RPDs were within GHDs nominated range with the exception of:

- TP106_0-0.2/FD20 – nickel (40%)
- TP205/FD01 – arsenic, chromium (III + VI), copper, lead, nickel and zinc (32% - 95%)
- TP208/FD05 – moisture (97%)
- BH407_0.2-0.3 / FD04 – chromium and nickel (38 – 44%)

The sample variability is considered to be the result of heterogeneity within the fill. The higher results have been used for data interpretation.

Based on the RPDs calculated for the field blind duplicates, the results and precision of the data is considered to be of an acceptable quality upon which to draw conclusions as part of this assessment.

Laboratory QA/QC control

Laboratory QA

The analytical laboratories undertook the analyses utilising their own internal procedures and test methods (for which they are NATA accredited) and in accordance with their own quality assurance system which forms part of their NATA accreditation.

Laboratory QC procedures

Laboratory QC procedures typically included analysis of the following:

- **Laboratory duplicate samples**: The analytical laboratory collects duplicate sub-samples from one sample submitted for analytical testing at a rate equivalent to 1 in 20 samples per analytical batch, or one sample per batch if less than twenty samples are analysed in a batch. A laboratory duplicate provides data on analytical batch and the analytical precision (repeatability) of the test result.
- **Spiked samples**: An authentic field sample is spiked by adding an aliquot of known concentration of the target analyte(s) prior to sample extraction and analysis. A spike documents the effect of the sample matrix on the extraction and analytical techniques.
- **Certified reference standards**: A reference standard of known (certified) concentration is analysed along with a batch of samples. The Certified Reference Standard provides an indication of the analytical accuracy of the test method.
- **Surrogate standard/spikes**: These are organic compounds which are similar to the analyte of interest in terms of chemical composition, extractability, and chromatographic conditions (retention time), but which are not normally found in environmental samples. These surrogate compounds are spiked into blanks, standards and samples submitted for organic analyses by gas-chromatographic techniques prior to sample extraction. They provide a means of checking that no gross errors have occurred during any stage of the test method leading to significant analyte loss.

- **Laboratory blank**: Usually an organic or aqueous solution that is as free as possible of analyte of interest to which is added all the reagents, in the same volume, as used in the preparation and subsequent analysis of the samples. The reagent blank is carried through the complete sample preparation procedure and contains the same reagent concentrations in the final solution as in the sample solution used for analysis. The reagent blank is used to correct for possible contamination resulting from the preparation or processing of the sample.

Laboratory QC results are presented in Appendix E.

Methodology used to assess QC results

The results of the field and laboratory QC samples were assessed to determine:

- The quality of the data generated.
- Whether the data meets the objectives of the study.
- Whether the data is acceptable for the intended use.

Laboratory QC assessment procedure

The individual laboratories undertake assessment of laboratory QC internally. Duplicates are assessed by calculating the RPD. Percent Recovery (PR) is used to assess spiked samples and surrogate standards. Acceptable values for RPD and PR can vary depending on the type of analyte tested, concentrations of analytes, and sample matrix.

Certified Reference Standards and Materials are analysed by comparing the test result to the certified concentration plus or minus a certified tolerance. Certified tolerances vary depending on the type of analyte tested and the certified concentration of the analyte.

Laboratory QA/QC results- Soil

The NATA certified laboratory results sheets, as presented in Appendix F, refer to a quality control program comprising the analysis of spikes, blanks and duplicate samples. Generally, the results reported indicate that the laboratory was achieving levels of performance within their recommended control limits during the period when the samples from this program were analysed. The laboratory QA/QC outliers are listed in Table D-2. It is noted that some of the laboratory reports contain results for other areas outside the Site and have not been considered in the exceedance summary table.

Table D-2 Laboratory QA/QC Exceedance Summary - Soils

Batch	Analyte/sample	Issue	Comment
ES1824374	Zinc in anonymous sample (lab ID ES1824297-002)	Matrix spike recovery not determined as background level was greater than or equal to 4x spike level	Zinc present in sample at elevated concentrations more than 4x LOR. This single outlier is not considered to be significant.
ES1825728	PAH, TPH, TRH and BTEXN in BH104_0.0-0.2 and BH104_0.2-0.3	Extraction and analysis undertaken 22-23 days after due date.	Based on laboratory preservation methods, holding time exceedance is not considered significant.
	Total recoverable mercury in BH104_0.0-0.2 and BH104_0.2-0.3	Extraction and analysis undertaken 9-10 days after due date.	Based on laboratory preservation methods, holding time exceedance is not considered significant.

Batch	Analyte/sample	Issue	Comment
ES1826547	pH extraction/ preparation for TP101_0.0-0.2, TP101_0.5-0.6, TP105_0.0-0.2, TP105_0.6-0.7	Extraction undertaken 6 days after due date.	Exceedance not considered significant.
725536	Nickel in anonymous sample (lab ID S20-Jn22527)	RPD (39%) outside of 30% acceptance limit.	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review.
	TRH C15-C28 in anonymous sample (lab ID (S20-Jn23443)	RPD (31%) outside of 30% acceptance limit.	

Based on a review of the laboratory QA/QC data, it is considered that the analytical results are reasonably representative of site conditions at the time of this assessment. Where outliers were noted above, they were considered to be attributed to soil sample heterogeneity.

Appendix E – Results table

							Asbestos		Metals								BTEXN							TRH - NEPM 2013							TRH - NEPM 1999				
				Moisture (%)	pH (lab)	Exchangeable Calcium	Asbestos (Trace)	Asbestos Fibres	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	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)
				%	pH Units	meq/100g	Fibres	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				0.1	0.1	0.1	Yes / No	Yes / No	5	1	2	5	5	0.1	2	5	0.2	0.5	0.5	0.5	0.5	0.5	0.2	10	10	50	50	100	100	50	10	50	100	100	50
NEPM 2013 EIL-Commercial/Industrial (0-2m)									160		420	140	1800		55	360							370												
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																	75	135	165			180		215			170	1,700	3,300						
NEPM 2013 Table 1A(1) HIL D Comm/Ind									3,000	900	3,600	240,000	1,500	730	6,000	400,000																			
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																	430	99,000	27,000			81,000	11,000	26,000		20,000		27,000	38,000						
PFAS NEMP 2.0 2020 Ecological direct exposure																																			
PFAS NEMP 2.0 2020 Ecological indirect exposure																																			
PFAS NEMP 2018 Health Industrial/Commercial																																			
Location Code	**Field ID**	**Date**	**Type**																																
BH101	BH101_0.0-0.2	29/08/2018	Normal	<1.0	-	-	No	No	<5	<1	<2	<5	<5	<0.1	<2	32	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH101	BH101_0.45-0.5	29/08/2018	Normal	4.6	-	-	-	-	<5	<1	<2	<5	<5	<0.1	<2	16	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH102	BH102_0.0-0.2	17/08/2018	Normal	14.2	-	-	-	-	<5	<1	7	86	36	0.6	<2	106	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	420	180	600	<10	<50	240	260	500
BH102	BH102_0.5-0.6	17/08/2018	Normal	9.8	-	-	-	-	<5	<1	2	24	7	0.1	<2	43	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	130	<100	130	<10	<50	<100	<100	<50
BH103	BH103_0.0-0.2	17/08/2018	Normal	1.3	-	-	No	No	<5	<1	<2	<5	<5	<0.1	<2	19	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH103	BH103_0.5-0.6	17/08/2018	Normal	25.2	-	-	-	-	<5	<1	2	11	<5	<0.1	<2	16	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH104	BH104_0.0-0.2	31/07/2018	Normal	3.9	-	-	No	No	<5	<1	5	72	25	0.4	<2	108	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	350	140	490	<10	<50	180	240	420
BH104	BH104_0.2-0.3	31/07/2018	Normal	6.2	-	-	-	-	<5	1	7	120	36	0.6	2	166	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	600	200	800	<10	<50	340	370	710
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	No	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	3	6	2.5	-	-	<5	<1	<2	6	6	<0.1	<2	36	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	6.5	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	11	-	-	-	-	<5	<1	4	61	16	0.3	<2	38	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP103	TP103_0.0-0.2	6/09/2018	Normal	5.9	-	-	-	-	<5	<1	<2	<5	<5	<0.1	<2	<5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP103	TP103 0.5-0.6	6/09/2018	Normal	28.4	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	14.6	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	<1.0	-	-	-	-	<5	<1	<2	10	<5	<0.1	<2	29	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP105	TP105_0.0-0.2	6/09/2018	Normal	<1.0	6.6	0.8	-	-	<5	<1	<2	<5	<5	<0.1	<2	21	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	6.7	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	14.9	-	-	No	No	25	<1	5	194	246	<0.1	<2	3,130	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP106	FD20	6/09/2018	Field_D	13.8	-	-	-	-	20	<1	5	206	287	<0.1	3	3,740	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
HA201	HA201_0.0-0.1	10/06/2020	Normal	9.4	-	-	No	No	2.5	<0.4	<5	<5	5.8	<0.1	<5	17	<0.1	<0.1	<0.1	0.2	<0.2	0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
HA201	HA201_0.2-0.3	10/06/2020	Normal	<1	-	-	-	-	2.8	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP202	TP202_0.0-0.1	10/06/2020	Normal	18	-	-	No	No	4.0	5.4	27	450	130	2.0	15	730	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	1,100	650	1,750	<20	33	480	780	1,293
TP202	TP202_0.2-0.3	10/06/2020	Normal	18	-	-	-	-	2.1	<0.4	<5	8.6	<5	<0.1	<5	8.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP203	TP203_0.0-0.1	10/06/2020	Normal	14	-	-	No	No	3.3	1.5	11	230	60	1.1	<5	150	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	880	380	1,260	<20	22	460	510	992
TP203	TP203_0.2-0.3	10/06/2020	Normal	1.4	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP204	TP204_0.0-0.1	10/06/2020	Normal	22	-	-	Yes	Yes	3.0	3.1	23	370	130	2.3	<5	260	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	51	51	1,000	620	1,671	<20	42	470	730	1,242
TP204	TP204_0.2-0.3	10/06/2020	Normal	8.8	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	47	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP205	TP205_0.0-0.1	10/06/2020	Normal	5.9	-	-	No	No	5.2	<0.4	<5	10	19	<0.1	<5	170	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP205	TP205_0.5-0.6	10/06/2020	Normal	9.8	-	-	No	No	6.8	<0.4	12	6.9	14	<0.1	<5	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	57	<50	<50	57
TP205	FD01	10/06/2020	Field_D	10	-	-	-	-	2.8	<0.4	<5	<5	43	<0.1	<5	56	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP206	TP206_0.0-0.1	10/06/2020	Normal	9	-	-	No	No	2.7	<0.4	<5	<5	<5	<0.1	<5	7.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP206	TP206_0.5-0.6	10/06/2020	Normal	11	-	-	-	-	3.3	<0.4	<5	<5	<5	<0.1	<5	8.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP207	TP207_0.0-0.1	10/06/2020	Normal	1.3	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP207	TP207_0.2-0.3	10/06/2020	Normal	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	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	TP208_0.0-0.1	10/06/2020	Normal	2.5	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	FD05	10/06/2020	Field_D	7.2	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	6.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	TP208_0.2-0.3	10/06/2020	Normal	11	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	7.3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH401	BH401_0.2-0.3	8/09/2020	Normal	2.1	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	8.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH401	BH401_0.5-0.6	8/09/2020	Normal	2.1	-	-	-	-	2.7	<0.4	<5	<5	<5	<0.1	<5	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	3.5	-	-	No	No	4.2	<0.4	140	8.3	10	<0.1	6	38	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH402	BH402_0.5-0.6	8/09/2020	Normal	4.0	-	-	-	-	4.6	<0.4	9.4	6.9	12	<0.1	<5	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	6.6	-	-	No	No	2.6	<0.4	<5	11	13	<0.1	<5	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	3.4	-	-	-	-	2.1	<0.4	<5	9.2	7.3	<0.1	<5	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	10	-	-	No	No	4.2	<0.4	6.2	22	21	<0.1	5.1	130	<0.1	<0.1	<0.1	0.7	1.2	1.9	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH404	BH404_0.5-0.6	8/09/2020	Normal	10	-	-	-	-	3.7	<0.4	6.6	24	10	0.1	<5	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	5.3	-	-	No	No	2.8	<0.4	11	22	10	<0.1	6.7	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	5.6	-	-	-	-	4.4	<0.4	11	25	11	<0.1	8.0	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	3.8	-	-	No	No	3.5	<0.4	6.2	17	12	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	61	<50	61
BH406	FD03	8/09/2020	Field_D	3.6	-	-	-	-	3.4	<0.4	6.2	16	13	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH406	BH406_0.5-0.6	8/09/2020	Normal	3.4	-	-	-	-	12	<0.4	<5	19	13	<0.1	<5	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	6.7	-	-	No	No	5.8	<0.4	8.3	18	14	<0.1	5.8	91	<0.1	<0.1	<0.1	0.1	0.3	0.4	<0.5	<20	<20	<50	<50	160	<100	160	<20	21	120	70	211
BH407	FD04	9/09/2020	Field_D	7.3	-	-	-	-	5.7	<0.4	13	20	15	<0.1	8.5	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	7.9	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	51	51	300	<100	351	<20	35	240	110	385
BH407	BH407_1.0-1.1	9/09/2020	Normal	3.0	-	-	-	-	2.7	<0.4	<5	<5	<5	<0.1	<5	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	2.1	-	-	No	No	2.1	<0.4	<5	34	24	0.2	<5	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	<1	-	-	-	-	<2	<0.4	<5	8.9	<5	<0.1	<5	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	1.7	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	3.3	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	5.0	-	-	No	No	4.3	<0.4	5.9	15	8.2	<0.1	7.8	56	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	110	<100	110	<20	<20	85	<50	85
BH410	BH410_0.5-0.6	9/09/2020	Normal	2.1	-	-	-	-	2.3	<0.4	<5	<5	<5	<0.1	<5	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	3.4	-	-	No	No	<2	<0.4	<5	6.3	<5	<0.1	<5	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	3.0	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	4.6	-	-	No	No	3.2	<0.4	<5	11	8.9	<0.1	<5	34	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH412	BH412_0.5-0.6	9/09/2020	Normal	4.4	-	-	-	-	<2	<0.4	<5	7.0	11	<0.1	<5	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix E
Table A
Soil Analytical Results

				PAHs																			
				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
LOR				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 EIL-Commercial/Industrial (0-2m)																	370						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)								1.4															
NEPM 2013 Table 1A(1) HIL D Comm/Ind																				4,000	40	40	40
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																	11,000						
PFAS NEMP 2.0 2020 Ecological direct exposure																							
PFAS NEMP 2.0 2020 Ecological indirect exposure																							
PFAS NEMP 2018 Health Industrial/Commercial																							
Location Code	**Field ID**	**Date**	**Type**																				
BH101	BH101_0.0-0.2	29/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH101	BH101_0.45-0.5	29/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH102	BH102_0.0-0.2	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH102	BH102_0.5-0.6	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH103	BH103_0.0-0.2	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH103	BH103_0.5-0.6	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH104	BH104_0.0-0.2	31/07/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH104	BH104_0.2-0.3	31/07/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP103	TP103_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP105	TP105_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP106	FD20	6/09/2018	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
HA201	HA201_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
HA201	HA201_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP202	TP202_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP202	TP202_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP203	TP203_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP203	TP203_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP204	TP204_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP204	TP204_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	TP205_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	TP205_0.5-0.6	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	FD01	10/06/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
TP206	TP206_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP206	TP206_0.5-0.6	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP207	TP207_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP207	TP207_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP208	TP208_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP208	FD05	10/06/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
TP208	TP208_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH401	BH401_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH406	FD03	8/09/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				OC Pesticides																												PCBs							
				Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 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	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	0.05	0.05	0.05	0.2	1	500	100	500	500	500	500	500	500
NEPM 2013 EIL-Commercial/Industrial (0-2m)																640	640																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																																							
NEPM 2013 Table 1A(1) HIL D Comm/Ind									45		530						3,600						100				50		80	2,500	160								7,000
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																																							
PFAS NEMP 2.0 2020 Ecological direct exposure																																							
PFAS NEMP 2.0 2020 Ecological indirect exposure																																							
PFAS NEMP 2018 Health Industrial/Commercial																																							
Location Code	**Field ID**	**Date**	**Type**																																				
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<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	-	-	-	-	-	-	-	-	<100
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	0.32	0.2	<0.05	<0.05	<0.05	0.12	<0.05	0.2	-	-	<0.05	<0.05	<0.05	<0.05	0.12	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500

				PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids										
				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)	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)
				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LOR				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPM 2013 EIL-Commercial/Industrial (0-2m)																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																						
NEPM 2013 Table 1A(1) HIL D Comm/Ind																						
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																						
PFAS NEMP 2.0 2020 Ecological direct exposure									**1,000**							**10,000**						
PFAS NEMP 2.0 2020 Ecological indirect exposure									*10*													
PFAS NEMP 2018 Health Industrial/Commercial																50,000						
Location Code	**Field ID**	**Date**	**Type**																			
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				PFAS										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 sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	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)
				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LOR				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPM 2013 EIL-Commercial/Industrial (0-2m)																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																			
NEPM 2013 Table 1A(1) HIL D Comm/Ind																			
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																			
PFAS NEMP 2.0 2020 Ecological direct exposure																			
PFAS NEMP 2.0 2020 Ecological indirect exposure																			
PFAS NEMP 2018 Health Industrial/Commercial														20,000				
Location Code	**Field ID**	**Date**	**Type**															
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

							Asbestos		Metals								BTEXN							TRH - NEPM 2013							TRH - NEPM 1999				
				Moisture (%)	pH (lab)	Exchangeable Calcium	Asbestos (Trace)	Asbestos Fibres	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	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)
				%	pH Units	meq/100g	Fibres	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				0.1	0.1	0.1	Yes / No	Yes / No	5	1	2	5	5	0.1	2	5	0.2	0.5	0.5	0.5	0.5	0.5	0.2	10	10	50	50	100	100	50	10	50	100	100	50
NEPM 2013 EIL-Commercial/Industrial (0-2m)									160		420	140	1800		55	360							370												
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																	75	135	165			180		215			170	1,700	3,300						
NEPM 2013 Table 1A(1) HIL D Comm/Ind									3,000	900	3,600	240,000	1,500	730	6,000	400,000																			
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																	430	99,000	27,000			81,000	11,000	26,000		20,000		27,000	38,000						
PFAS NEMP 2.0 2020 Ecological direct exposure																																			
PFAS NEMP 2.0 2020 Ecological indirect exposure																																			
PFAS NEMP 2018 Health Industrial/Commercial																																			
Location Code	**Field ID**	**Date**	**Type**																																
BH101	BH101_0.0-0.2	29/08/2018	Normal	<1.0	-	-	No	No	<5	<1	<2	<5	<5	<0.1	<2	32	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH101	BH101_0.45-0.5	29/08/2018	Normal	4.6	-	-	-	-	<5	<1	<2	<5	<5	<0.1	<2	16	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH102	BH102_0.0-0.2	17/08/2018	Normal	14.2	-	-	-	-	<5	<1	7	86	36	0.6	<2	106	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	420	180	600	<10	<50	240	260	500
BH102	BH102_0.5-0.6	17/08/2018	Normal	9.8	-	-	-	-	<5	<1	2	24	7	0.1	<2	43	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	130	<100	130	<10	<50	<100	<100	<50
BH103	BH103_0.0-0.2	17/08/2018	Normal	1.3	-	-	No	No	<5	<1	<2	<5	<5	<0.1	<2	19	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH103	BH103_0.5-0.6	17/08/2018	Normal	25.2	-	-	-	-	<5	<1	2	11	<5	<0.1	<2	16	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
BH104	BH104_0.0-0.2	31/07/2018	Normal	3.9	-	-	No	No	<5	<1	5	72	25	0.4	<2	108	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	350	140	490	<10	<50	180	240	420
BH104	BH104_0.2-0.3	31/07/2018	Normal	6.2	-	-	-	-	<5	1	7	120	36	0.6	2	166	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	600	200	800	<10	<50	340	370	710
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	No	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	3	6	2.5	-	-	<5	<1	<2	6	6	<0.1	<2	36	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	6.5	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	11	-	-	-	-	<5	<1	4	61	16	0.3	<2	38	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP103	TP103_0.0-0.2	6/09/2018	Normal	5.9	-	-	-	-	<5	<1	<2	<5	<5	<0.1	<2	<5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP103	TP103 0.5-0.6	6/09/2018	Normal	28.4	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	14.6	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	<1.0	-	-	-	-	<5	<1	<2	10	<5	<0.1	<2	29	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP105	TP105_0.0-0.2	6/09/2018	Normal	<1.0	6.6	0.8	-	-	<5	<1	<2	<5	<5	<0.1	<2	21	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	6.7	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	14.9	-	-	No	No	25	<1	5	194	246	<0.1	<2	3,130	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
TP106	FD20	6/09/2018	Field_D	13.8	-	-	-	-	20	<1	5	206	287	<0.1	3	3,740	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-	<10	<10	<50	<50	<100	<100	<50	<10	<50	<100	<100	<50
HA201	HA201_0.0-0.1	10/06/2020	Normal	9.4	-	-	No	No	2.5	<0.4	<5	<5	5.8	<0.1	<5	17	<0.1	<0.1	<0.1	0.2	<0.2	0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
HA201	HA201_0.2-0.3	10/06/2020	Normal	<1	-	-	-	-	2.8	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP202	TP202_0.0-0.1	10/06/2020	Normal	18	-	-	No	No	4.0	5.4	27	450	130	2.0	15	730	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	1,100	650	1,750	<20	33	480	780	1,293
TP202	TP202_0.2-0.3	10/06/2020	Normal	18	-	-	-	-	2.1	<0.4	<5	8.6	<5	<0.1	<5	8.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP203	TP203_0.0-0.1	10/06/2020	Normal	14	-	-	No	No	3.3	1.5	11	230	60	1.1	<5	150	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	880	380	1,260	<20	22	460	510	992
TP203	TP203_0.2-0.3	10/06/2020	Normal	1.4	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP204	TP204_0.0-0.1	10/06/2020	Normal	22	-	-	Yes	Yes	3.0	3.1	23	370	130	2.3	<5	260	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	51	51	1,000	620	1,671	<20	42	470	730	1,242
TP204	TP204_0.2-0.3	10/06/2020	Normal	8.8	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	47	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP205	TP205_0.0-0.1	10/06/2020	Normal	5.9	-	-	No	No	5.2	<0.4	<5	10	19	<0.1	<5	170	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP205	TP205_0.5-0.6	10/06/2020	Normal	9.8	-	-	No	No	6.8	<0.4	12	6.9	14	<0.1	<5	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	57	<50	<50	57
TP205	FD01	10/06/2020	Field_D	10	-	-	-	-	2.8	<0.4	<5	<5	43	<0.1	<5	56	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP206	TP206_0.0-0.1	10/06/2020	Normal	9	-	-	No	No	2.7	<0.4	<5	<5	<5	<0.1	<5	7.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP206	TP206_0.5-0.6	10/06/2020	Normal	11	-	-	-	-	3.3	<0.4	<5	<5	<5	<0.1	<5	8.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP207	TP207_0.0-0.1	10/06/2020	Normal	1.3	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP207	TP207_0.2-0.3	10/06/2020	Normal	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	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	TP208_0.0-0.1	10/06/2020	Normal	2.5	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	FD05	10/06/2020	Field_D	7.2	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	6.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
TP208	TP208_0.2-0.3	10/06/2020	Normal	11	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	7.3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH401	BH401_0.2-0.3	8/09/2020	Normal	2.1	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	8.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH401	BH401_0.5-0.6	8/09/2020	Normal	2.1	-	-	-	-	2.7	<0.4	<5	<5	<5	<0.1	<5	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	3.5	-	-	No	No	4.2	<0.4	140	8.3	10	<0.1	6	38	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH402	BH402_0.5-0.6	8/09/2020	Normal	4.0	-	-	-	-	4.6	<0.4	9.4	6.9	12	<0.1	<5	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	6.6	-	-	No	No	2.6	<0.4	<5	11	13	<0.1	<5	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	3.4	-	-	-	-	2.1	<0.4	<5	9.2	7.3	<0.1	<5	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	10	-	-	No	No	4.2	<0.4	6.2	22	21	<0.1	5.1	130	<0.1	<0.1	<0.1	0.7	1.2	1.9	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH404	BH404_0.5-0.6	8/09/2020	Normal	10	-	-	-	-	3.7	<0.4	6.6	24	10	0.1	<5	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	5.3	-	-	No	No	2.8	<0.4	11	22	10	<0.1	6.7	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	5.6	-	-	-	-	4.4	<0.4	11	25	11	<0.1	8.0	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	3.8	-	-	No	No	3.5	<0.4	6.2	17	12	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	61	<50	61
BH406	FD03	8/09/2020	Field_D	3.6	-	-	-	-	3.4	<0.4	6.2	16	13	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH406	BH406_0.5-0.6	8/09/2020	Normal	3.4	-	-	-	-	12	<0.4	<5	19	13	<0.1	<5	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	6.7	-	-	No	No	5.8	<0.4	8.3	18	14	<0.1	5.8	91	<0.1	<0.1	<0.1	0.1	0.3	0.4	<0.5	<20	<20	<50	<50	160	<100	160	<20	21	120	70	211
BH407	FD04	9/09/2020	Field_D	7.3	-	-	-	-	5.7	<0.4	13	20	15	<0.1	8.5	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	7.9	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	51	51	300	<100	351	<20	35	240	110	385
BH407	BH407_1.0-1.1	9/09/2020	Normal	3.0	-	-	-	-	2.7	<0.4	<5	<5	<5	<0.1	<5	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	2.1	-	-	No	No	2.1	<0.4	<5	34	24	0.2	<5	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	<1	-	-	-	-	<2	<0.4	<5	8.9	<5	<0.1	<5	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	1.7	-	-	No	No	<2	<0.4	<5	<5	<5	<0.1	<5	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	3.3	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	5.0	-	-	No	No	4.3	<0.4	5.9	15	8.2	<0.1	7.8	56	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	110	<100	110	<20	<20	85	<50	85
BH410	BH410_0.5-0.6	9/09/2020	Normal	2.1	-	-	-	-	2.3	<0.4	<5	<5	<5	<0.1	<5	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	3.4	-	-	No	No	<2	<0.4	<5	6.3	<5	<0.1	<5	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	3.0	-	-	-	-	<2	<0.4	<5	<5	<5	<0.1	<5	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	4.6	-	-	No	No	3.2	<0.4	<5	11	8.9	<0.1	<5	34	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50
BH412	BH412_0.5-0.6	9/09/2020	Normal	4.4	-	-	-	-	<2	<0.4	<5	7.0	11	<0.1	<5	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix E
Table A
Soil Analytical Results

				PAHs																			
				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
LOR				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 EIL-Commercial/Industrial (0-2m)																	370						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)								1.4															
NEPM 2013 Table 1A(1) HIL D Comm/Ind																				4,000	40	40	40
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																	11,000						
PFAS NEMP 2.0 2020 Ecological direct exposure																							
PFAS NEMP 2.0 2020 Ecological indirect exposure																							
PFAS NEMP 2018 Health Industrial/Commercial																							
Location Code	**Field ID**	**Date**	**Type**																				
BH101	BH101_0.0-0.2	29/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH101	BH101_0.45-0.5	29/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH102	BH102_0.0-0.2	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH102	BH102_0.5-0.6	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH103	BH103_0.0-0.2	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH103	BH103_0.5-0.6	17/08/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH104	BH104_0.0-0.2	31/07/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH104	BH104_0.2-0.3	31/07/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP103	TP103_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP105	TP105_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP106	FD20	6/09/2018	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
HA201	HA201_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
HA201	HA201_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP202	TP202_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP202	TP202_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP203	TP203_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP203	TP203_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP204	TP204_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP204	TP204_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	TP205_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	TP205_0.5-0.6	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP205	FD01	10/06/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
TP206	TP206_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP206	TP206_0.5-0.6	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP207	TP207_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP207	TP207_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP208	TP208_0.0-0.1	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
TP208	FD05	10/06/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
TP208	TP208_0.2-0.3	10/06/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH401	BH401_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH406	FD03	8/09/2020	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				OC Pesticides																												PCBs							
				Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 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	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	0.05	0.05	0.05	0.2	1	500	100	500	500	500	500	500	500
NEPM 2013 EIL-Commercial/Industrial (0-2m)																640	640																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																																							
NEPM 2013 Table 1A(1) HIL D Comm/Ind									45		530						3,600						100				50		80	2,500	160								7,000
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																																							
PFAS NEMP 2.0 2020 Ecological direct exposure																																							
PFAS NEMP 2.0 2020 Ecological indirect exposure																																							
PFAS NEMP 2018 Health Industrial/Commercial																																							
Location Code	**Field ID**	**Date**	**Type**																																				
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<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	-	-	-	-	-	-	-	-	<100
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	0.32	0.2	<0.05	<0.05	<0.05	0.12	<0.05	0.2	-	-	<0.05	<0.05	<0.05	<0.05	0.12	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	<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	<0.05	<0.2	<1	<500	<100	<500	<500	<500	<500	<500	<500

				PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids										
				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)	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)
				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LOR				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPM 2013 EIL-Commercial/Industrial (0-2m)																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																						
NEPM 2013 Table 1A(1) HIL D Comm/Ind																						
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																						
PFAS NEMP 2.0 2020 Ecological direct exposure									**1,000**							**10,000**						
PFAS NEMP 2.0 2020 Ecological indirect exposure									*10*													
PFAS NEMP 2018 Health Industrial/Commercial																50,000						
Location Code	**Field ID**	**Date**	**Type**																			
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				PFAS										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 sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	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)
				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LOR				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPM 2013 EIL-Commercial/Industrial (0-2m)																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)																			
NEPM 2013 Table 1A(1) HIL D Comm/Ind																			
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial																			
PFAS NEMP 2.0 2020 Ecological direct exposure																			
PFAS NEMP 2.0 2020 Ecological indirect exposure																			
PFAS NEMP 2018 Health Industrial/Commercial														20,000				
Location Code	**Field ID**	**Date**	**Type**															
BH101	BH101_0.0-0.2	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101	BH101_0.45-0.5	29/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	BH102_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.0-0.2	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH103	BH103_0.5-0.6	17/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.0-0.2	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH104	BH104_0.2-0.3	31/07/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH108	BH108_0.0-0.2	22/08/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	TP101_0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	TP102_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 0.5-0.6	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	TP103 1.0-1.1	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	TP104_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	TP105_0.6-0.7	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	TP106_0.0-0.2	6/09/2018	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	FD20	6/09/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP202	TP202_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203	TP203_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP204	TP204_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP205	FD01	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206	TP206_0.5-0.6	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP207	TP207_0.2-0.3	10/06/2020	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TP208	TP208_0.0-0.1	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	FD05	10/06/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP208	TP208_0.2-0.3	10/06/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401	BH401_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402	BH402_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH403	BH403_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH404	BH404_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405	BH405_0.7-0.8	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.2-0.3	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	FD03	8/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH406	BH406_0.5-0.6	8/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH407	BH407_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH408	BH408_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409	BH409_1.0-1.1	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH410	BH410_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH411	BH411_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.2-0.3	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH412	BH412_0.5-0.6	9/09/2020	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH101, BH104	COMP 2 (BH101_0.0-0.2, BH104_0.0-0.2)	30/08/2018	Composite (2 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 1 (TP203_0.0-0.1, TP204-0.0-0.1 and TP205_0.0-0.1,)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP206, TP207, TP208	COMP 2 (TP206_0.0-0.1, TP207_0.0-0.1, TP208_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201, TP202, TP206	COMP 3 (HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3)	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP203, TP204, TP205	COMP 4 (TP203_0.5-0.6, TP204_0.5-0.6 and TP203_0.5-0.5	10/06/2020	Composite (3 Samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH401, BH402, BH403, BH404	COMP 1 (BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3 and BH404_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH405, BH406, BH407, BH408	COMP 2 (BH405_0.2-0.3, BH406_0.2-0.3, BH407_0.2-0.3 and BH408_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH409, BH410, BH411, BH412	COMP 3 (BH409_0.2-0.3, BH410_0.2-0.3, BH411_0.2-0.3 and BH412_0.2-0.3)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH402, BH405, BH409, BH412	COMP 4 (BH402_0.5-0.6, BH405_0.7-0.8, BH409_0.5-0.6 and BH412_0.5-0.6)	9/09/2020	Composite (4 samples)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Metals								BTEXN						
				Moisture (%)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)
				%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				0.1	5	1	2	5	5	0.1	2	5	0.2	0.5	0.5	0.5	0.5	0.5	0.2
NEPM 2013 EIL-Commercial/Industrial (0-2m)					160		250	95	1100		30	230							170
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)													75	135	165			180	
NEPM 2013 Table 1A(1) HIL D Comm/Ind					3,000	900	3,600	240,000	1,500	730	6,000	400,000							
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial													430	99,000	27,000			81,000	11,000
PFAS NEMP 2.0 2020 Ecological direct exposure																			
PFAS NEMP 2.0 2020 Ecological indirect exposure																			
PFAS NEMP 2018 Health Industrial/Commercial																			
Duplicates QA/QC																			
Location Code	**Field ID**	**Date**	**Type**																
TP106	TP106_0.0-0.2	6/09/2018	Normal	14.9	25	<1	5	194	246	<0.1	<2	3,130	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-
TP106	FD20	6/09/2018	Field_D	13.8	20	<1	5	206	287	<0.1	3	3,740	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	-
	RPD (%)			8	22	NC	0	6	15	NC	***40***	18	NC	NC	NC	NC	NC	NC	-
TP205	TP205_0.5-0.6	10/06/2020	Normal	10	6.8	<0.4	12	6.9	14	<0.1	<5	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
TP205	FD01	10/06/2020	Field_D	9	2.8	<0.4	<5	<5	43	<0.1	<5	56	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
	RPD (%)			***11***	***83***	NC	***82***	***32***	***95***	NC	NC	***56***	NC	NC	NC	NC	NC	NC	NC
TP208	TP208_0.0-0.1	10/06/2020	Normal	2.5	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
TP208	FD05	10/06/2020	Field_D	7.2	<2	<0.4	<5	<5	<5	<0.1	<5	6.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
	RPD (%)			97	NC	NC	NC	NC	NC	NC	NC	18	NC	NC	NC	NC	NC	NC	NC
BH406	BH406_0.2-0.3	8/09/2020	Normal	3.8	3.5	<0.4	6.2	17	12	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH406	FD03	8/09/2020	Field_D	3.6	3.4	<0.4	6.2	16	13	<0.1	<5	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
	RPD (%)			5	3	NC	0	6	8	NC	NC	0	NC	NC	NC	NC	NC	NC	NC
BH407	BH407_0.2-0.3	9/09/2020	Normal	6.7	5.8	<0.4	8.3	18	14	<0.1	5.8	91	<0.1	<0.1	<0.1	0.1	0.3	0.4	<0.5
BH407	FD04	9/09/2020	Field_D	7.3	5.7	<0.4	13	20	15	<0.1	8.5	110	-	-	-	-	-	-	-
	RPD (%)			9	2	NC	***44***	11	7	NC	***38***	19	-	-	-	-	-	-	-

BOLD	RPD exceeds nominal threshold of 30% for inorganics and 50% for organics
NC	RPD not calculated as both the primary and duplicate sample were below the LOR. Where one of either the primary or duplicate samples were recorded below the laboratory LOR, the LOR was adopted to calculate the RPD

				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)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	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
				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				10	10	50	50	100	100	10	50	100	100	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 EIL-Commercial/Industrial (0-2m)																											170			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil (0-2m)				215			170	1,700	3,300									1.4												
NEPM 2013 Table 1A(1) HIL D Comm/Ind																														
CRC CARE 2011 Soil Direct Contact HSL-D Commercial / Industrial				26,000		20,000		27,000	38,000																		11,000			
PFAS NEMP 2.0 2020 Ecological direct exposure																														
PFAS NEMP 2.0 2020 Ecological indirect exposure																														
PFAS NEMP 2018 Health Industrial/Commercial																														
Duplicates QA/QC																														
Location Code	**Field ID**	**Date**	**Type**																											
TP106	TP106_0.0-0.2	6/09/2018	Normal	<10	<10	<50	<50	<100	<100	<10	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP106	FD20	6/09/2018	Field_D	<10	<10	<50	<50	<100	<100	<10	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	RPD (%)			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
TP205	TP205_0.5-0.6	10/06/2020	Normal	<20	<20	<50	<50	<100	<100	<20	57	<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
TP205	FD01	10/06/2020	Field_D	<20	<20	<50	<50	<100	<100	<20	<20	<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
	RPD (%)			NC	NC	NC	NC	NC	NC	NC	***96***	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
TP208	TP208_0.0-0.1	10/06/2020	Normal	<20	<20	<50	<50	<100	<100	<20	<20	<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
TP208	FD05	10/06/2020	Field_D	<20	<20	<50	<50	<100	<100	<20	<20	<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
	RPD (%)			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
BH406	BH406_0.2-0.3	8/09/2020	Normal	<20	<20	<50	<50	<100	<100	<20	<20	61	<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
BH406	FD03	8/09/2020	Field_D	<20	<20	<50	<50	<100	<100	<20	<20	<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
	RPD (%)			NC	NC	NC	NC	NC	NC	NC	NC	20	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
BH407	BH407_0.2-0.3	9/09/2020	Normal	<20	<20	<50	<50	160	<100	<20	21	120	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH407	FD04	9/09/2020	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RPD (%)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BOLD RPD exceeds nominal threshold of 30% for inorganics and 50% for organics

NC RPD not calculated as both the primary and duplicate sample were below the LOR. Where one of either the primary or duplicate samples were recorded below the laboratory LOR, the LOR was adopted to calculate the RPD

Appendix F – Laboratory certificates

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1824374**	Page	: 1 of 6
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 17-Aug-2018 16:53
Order number	:	Date Analysis Commenced	: 20-Aug-2018
C-O-C number	: ----	Issue Date	: 23-Aug-2018 15:47
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 12		
No. of samples analysed	: 4		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH102_0.0-0.2	BH102_0.5-0.6	BH103_0.0-0.2	BH103_0.5-0.6	----
			Client sampling date / time	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1824374-001	ES1824374-003	ES1824374-007	ES1824374-009	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	14.2	9.8	1.3	25.2	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----
Sample weight (dry)	----	0.01	g	----	----	355	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	S.SPOONER	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	7	2	<2	2	----
Copper	7440-50-8	5	mg/kg	86	24	<5	11	----
Lead	7439-92-1	5	mg/kg	36	7	<5	<5	----
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	<2	----
Zinc	7440-66-6	5	mg/kg	106	43	19	16	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.6	0.1	<0.1	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH102_0.0-0.2	BH102_0.5-0.6	BH103_0.0-0.2	BH103_0.5-0.6	----
			Client sampling date / time	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1824374-001	ES1824374-003	ES1824374-007	ES1824374-009	--------
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	**240**	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	**260**	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**500**	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	**420**	**130**	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	**180**	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	**600**	**130**	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**92.2**	**93.3**	**101**	**103**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**83.1**	**83.5**	**81.5**	**81.2**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**75.2**	**71.0**	**63.7**	**70.7**	----
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH102_0.0-0.2	BH102_0.5-0.6	BH103_0.0-0.2	BH103_0.5-0.6	----
			Client sampling date / time	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	17-Aug-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1824374-001	ES1824374-003	ES1824374-007	ES1824374-009	--------
				Result	Result	Result	Result	----
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.5	%	85.1	85.3	87.4	85.8	----
Anthracene-d10	1719-06-8	0.5	%	84.3	85.6	86.8	85.0	----
4-Terphenyl-d14	1718-51-0	0.5	%	84.4	88.0	81.1	92.8	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	92.6	88.0	95.4	88.0	----
Toluene-D8	2037-26-5	0.2	%	83.7	79.2	80.5	80.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	88.5	82.9	84.8	84.7	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH103_0.0-0.2 - 17-Aug-2018 00:00	Mid brown sandy soil.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1824374**	Page	: 1 of 7
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 17-Aug-2018
Order number	:	Date Analysis Commenced	: 20-Aug-2018
C-O-C number	: ----	Issue Date	: 23-Aug-2018
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 12		
No. of samples analysed	: 4		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1887041)									
ES1824372-007	Anonymous	EA055: Moisture Content	----	0.1	%	48.2	51.4	6.34	0% - 20%
ES1824413-003	Anonymous	EA055: Moisture Content	----	0.1	%	7.6	7.3	4.79	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1889224)									
ES1824297-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	22	20.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	12	18.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	35	32	6.98	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	38	39	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	1150	1200	4.19	0% - 20%
ES1824321-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	56	55	1.95	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	14	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	8	17.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	18	7.11	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	34	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1889225)									
ES1824297-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1824321-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1883707)									
ES1824321-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1883707) - continued									
ES1824321-003	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1883260)									
ES1824258-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1824443-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1883706)									
ES1824321-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	120	<100	17.2	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1883260)									
ES1824258-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1824443-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1883706)									
ES1824321-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	130	<100	27.5	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1883260)									
ES1824258-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080: BTEXN (QC Lot: 1883260) - continued									
ES1824443-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1889224)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	104	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.0	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	103	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	98.5	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	106	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1889225)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.3	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1883707)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	93.7	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.8	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	95.0	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	95.0	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	98.2	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	91.5	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.6	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	92.7	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	98.2	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.4	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	97.1	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	94.0	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	90.5	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.7	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	92.3	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	88.9	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1883260)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	83.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1883706)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	114	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	116	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	102	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1883260)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1883260) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	88.3	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1883706)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	115	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	111	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	120	63	131
EP080: BTEXN (QCLot: 1883260)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.8	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	85.2	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.1	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	84.1	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	92.3	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1889224)							
ES1824297-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	106	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	112	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	108	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1889225)							
ES1824297-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.6	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1883707)							
ES1824321-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.8	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	91.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1883260)							
ES1824258-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	80.1	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1883706)							
ES1824321-003	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	111	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	124	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	82.9	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1883260)							
ES1824258-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	80.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1883706)							
ES1824321-003	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	115	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	104	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	73.1	52	132
EP080: BTEXN (QCLot: 1883260)							
ES1824258-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	76.1	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	75.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	77.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	75.6	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.5	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	81.3	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1824374**	Page	: 1 of 5
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 17-Aug-2018
Site	:	Issue Date	: 23-Aug-2018
Sampler	: JULIAN FOWLER	No. of samples received	: 12
Order number	:	No. of samples analysed	: 4

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES1824297--002	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**----**	----	----	**21-Aug-2018**	31-Aug-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200)								
BH103_0.0-0.2		**17-Aug-2018**	**----**	----	----	**20-Aug-2018**	13-Feb-2019	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**22-Aug-2018**	13-Feb-2019	✓	**22-Aug-2018**	13-Feb-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**22-Aug-2018**	14-Sep-2018	✓	**22-Aug-2018**	14-Sep-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**21-Aug-2018**	29-Sep-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**21-Aug-2018**	29-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**22-Aug-2018**	31-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**21-Aug-2018**	29-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**22-Aug-2018**	31-Aug-2018	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
BH102_0.0-0.2, BH103_0.0-0.2,	BH102_0.5-0.6, BH103_0.5-0.6	**17-Aug-2018**	**20-Aug-2018**	31-Aug-2018	✓	**22-Aug-2018**	31-Aug-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Cooling Method: Ice Gel None
Cooling Initiated: Yes No
Free ice / frozen gel packs present upon receipt: Yes No N/A
Random Samples received in acceptable condition: Yes No
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	4.55pm		MC
DATE/TIME: 17/08/18 1650	DATE/TIME: 17-8-18	DATE/TIME: 17/8/18 17:00	DATE/TIME: 17/8/18 7:30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: As, Cd Cr, Cu, Hg, Ni, Pb, Zn

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price). Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH, BTEXN PAH, 8 metals	Asbestos Presence/Absence	Asbestos Hold						Additional Information
1	BH102_0.0-0.2		S		2	X		X						
2	BH102_0.2-0.3		↓		2			X						
3	BH102_0.5-0.6				2	X		X						
4	BH102_1.0-1.1				2			X						
5	BH102_1.5-1.6				2			X						
6	FD2				1									
7	BH103_0.0-0.2				2	X	X							
8	BH103_0.2-0.3				2			X						
9	BH103_0.5-0.6				2	X		X						
10	BH103_1.0-1.1				2			X						
11	BH103_1.5-1.6				2			X						
12	FD3		↓		1									
				TOTAL										

E-MAILED

Environmental Division Sydney
Work Order Reference
ES1824374

Telephone : + 61-2-8784 8555

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1825384**	Page	: 1 of 5
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 28-Aug-2018 10:00
Order number	: ----	Date Analysis Commenced	: 30-Aug-2018
C-O-C number	: ----	Issue Date	: 03-Sep-2018 13:27
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 3		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP068: Positive result has been confirmed by re-extraction and re-analysis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	COMP 1	----	----	----	----
			Client sampling date / time	[17-Aug-2018]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1825384-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.2**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	**0.06**	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	**0.06**	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**96.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**97.6**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	COMP 1	----	----	----	----
			Client sampling date / time	[17-Aug-2018]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1825384-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**96.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1825384**	Page	: 1 of 5
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 28-Aug-2018
Order number	: ----	Date Analysis Commenced	: 30-Aug-2018
C-O-C number	: ----	Issue Date	: 03-Sep-2018
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 3		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1906689)									
ES1825334-007	Anonymous	EA055: Moisture Content	----	0.1	%	47.0	46.3	1.54	0% - 20%
ES1825343-011	Anonymous	EA055: Moisture Content	----	0.1	%	11.7	11.3	3.32	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1904951)									
ES1825384-001	COMP 1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1904950)									
ES1825384-001	COMP 1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	0.06	0.07	25.5	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1904950) - continued									
ES1825384-001	COMP 1	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1904951)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	97.0	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 1904950)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	101	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	100	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	103	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	103	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	102	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	102	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.6	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	90.3	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	101	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	84.7	54	130

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1904951)							
ES1825384-001	COMP 1	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	106	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1904950)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 1904950) - continued							
ES1825384-001	COMP 1	EP068: gamma-BHC	58-89-9	0.5 mg/kg	94.9	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	89.4	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	91.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	107	70	130
		EP068: Endrin	72-20-8	2 mg/kg	89.3	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	81.1	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1825384**	Page	: 1 of 4
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 28-Aug-2018
Site	:	Issue Date	: 03-Sep-2018
Sampler	: JULIAN FOWLER	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / *Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
COMP 1	**17-Aug-2018**	**----**	----	----	**30-Aug-2018**	31-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
COMP 1	**17-Aug-2018**	**30-Aug-2018**	31-Aug-2018	✓	**31-Aug-2018**	09-Oct-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
COMP 1	**17-Aug-2018**	**30-Aug-2018**	31-Aug-2018	✓	**31-Aug-2018**	09-Oct-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)

Preparation Methods	Method	Matrix	Method Descriptions
Sample Compositing	* EN020	SOIL	Equal weights of each original soil are taken, then mixed and homogenised. The combined mixture is labelled as a new sample.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Fadi Soro

Fadi
28/8/18
10am

From: Julian Fowler <Julian.Fowler@ghd.com>
Sent: Tuesday, 28 August 2018 9:37 AM
To: Samples Sydney
Subject: additional analysis for ES1824374

$650
#1,7

Good morning,

For work order ES1824374, I would like to request an analysis of a composite of 2 samples:
2 BH102_0.0-0.2
3 BH103_0.0-0.2
For OCP's and PCB

1. Comp 1

Let me know if there will be any issues.

Thanks

Environmental Division
Sydney
Work Order Reference
ES1825384

Telephone : + 61-2-8784 8555

Regards

Julian Fowler
Environmental Technician

GHD
T: 61 2 4979 9999 | D: 61 2 4979 9910 | V: 229910 | M1: 0466 049 181 | M2: 0423 163 493 | F 61 2 4979 9988 | E: julian.fowler@ghd.com
Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle, NSW, 2300 | PO Box 5403 HRMC, NSW, 2310, Australia | www.ghd.com

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1825728**	Page	: 1 of 31
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 31-Aug-2018 13:08
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 10-Sep-2018 17:07
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 80		
No. of samples analysed	: 60		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: COMPOSITE (Matrix: SOIL)			Client sample ID	COMP 2	COMP 3	----	----	----
			Client sampling date / time	30-Aug-2018 00:00	31-Aug-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1825728-079	ES1825728-080	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	2.8	6.0	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	75.3	113	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	106	134	----	----	----

Analytical Results

Sub-Matrix: **COMPOSITE** (Matrix: **SOIL**)			Client sample ID	**COMP 2**	**COMP 3**	**----**	**----**	**----**
			Client sampling date / time	30-Aug-2018 00:00	31-Aug-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	**ES1825728-079**	**ES1825728-080**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**97.7**	**107**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH108_0.0-0.2	BH101_0.0-0.2	BH101_0.45-0.5	BH301_0.0-0.2	BH301_0.45-0.5
			Client sampling date / time	22-Aug-2018 00:00	29-Aug-2018 00:00	29-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-001	ES1825728-004	ES1825728-006	ES1825728-010	ES1825728-012
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	<1.0	4.6	6.3	9.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	----	----	----
Asbestos Type	1332-21-4	-	--	-	-	----	----	----
Sample weight (dry)	----	0.01	g	373	406	----	----	----
APPROVED IDENTIFIER:	----	-	--	G.MORGAN	G.MORGAN	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	<5	9
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	<2	<2	2	5
Copper	7440-50-8	5	mg/kg	----	<5	<5	7	13
Lead	7439-92-1	5	mg/kg	----	<5	<5	8	18
Nickel	7440-02-0	2	mg/kg	----	<2	<2	2	6
Zinc	7440-66-6	5	mg/kg	----	32	16	22	21
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	1.0	1.3
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	0.5	0.7
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH108_0.0-0.2	BH101_0.0-0.2	BH101_0.45-0.5	BH301_0.0-0.2	BH301_0.45-0.5
			Client sampling date / time	22-Aug-2018 00:00	29-Aug-2018 00:00	29-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-001	ES1825728-004	ES1825728-006	ES1825728-010	ES1825728-012
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	1.5	2.0
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	81.1	76.1	75.3	73.6
2-Chlorophenol-D4	93951-73-6	0.5	%	----	86.6	81.4	80.4	78.9
2.4.6-Tribromophenol	118-79-6	0.5	%	----	64.2	60.6	64.4	64.9
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH108_0.0-0.2	BH101_0.0-0.2	BH101_0.45-0.5	BH301_0.0-0.2	BH301_0.45-0.5
			Client sampling date / time	22-Aug-2018 00:00	29-Aug-2018 00:00	29-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-001	ES1825728-004	ES1825728-006	ES1825728-010	ES1825728-012
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.5	%	----	101	95.0	94.1	91.6
Anthracene-d10	1719-06-8	0.5	%	----	96.0	90.2	87.0	86.6
4-Terphenyl-d14	1718-51-0	0.5	%	----	81.2	76.8	76.9	74.7
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	89.8	94.8	114	103
Toluene-D8	2037-26-5	0.2	%	----	89.9	93.2	115	99.3
4-Bromofluorobenzene	460-00-4	0.2	%	----	96.2	95.0	116	98.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH301_0.95-1.0	BH301_1.45-1.5	BH301_2.0-2.1	BH301_2.45-2.5	BH301_3.0-3.1
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-013	ES1825728-014	ES1825728-015	ES1825728-016	ES1825728-017
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**6.2**	**7.1**	**7.2**	**7.2**	**6.5**
pH (Fox)	----	0.1	pH Unit	**2.9**	**4.4**	**4.6**	**4.0**	**3.4**
Reaction Rate	----	1	Reaction Unit	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH301_3.5-3.6	BH302_0.0-0.2	BH302_0.2-0.3	BH302_0.95-1.0	BH302_1.45-1.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-018	ES1825728-023	ES1825728-024	ES1825728-026	ES1825728-027
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	----	----	7.7	6.8
pH (Fox)	----	0.1	pH Unit	3.6	----	----	3.4	4.0
Reaction Rate	----	1	Reaction Unit	2	----	----	3	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	9.5	5.6	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	6	<5	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	3	5	----	----
Copper	7440-50-8	5	mg/kg	----	14	10	----	----
Lead	7439-92-1	5	mg/kg	----	9	11	----	----
Nickel	7440-02-0	2	mg/kg	----	4	4	----	----
Zinc	7440-66-6	5	mg/kg	----	29	52	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	0.6	0.6	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH301_3.5-3.6	BH302_0.0-0.2	BH302_0.2-0.3	BH302_0.95-1.0	BH302_1.45-1.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-018	ES1825728-023	ES1825728-024	ES1825728-026	ES1825728-027
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	74.0	74.8	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	79.2	79.8	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	70.3	65.7	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	91.6	92.5	----	----
Anthracene-d10	1719-06-8	0.5	%	----	86.7	86.6	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH301_3.5-3.6	BH302_0.0-0.2	BH302_0.2-0.3	BH302_0.95-1.0	BH302_1.45-1.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-018	ES1825728-023	ES1825728-024	ES1825728-026	ES1825728-027
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.5	%	----	74.8	74.6	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	98.4	99.1	----	----
Toluene-D8	2037-26-5	0.2	%	----	97.8	103	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	100	102	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH302_2.0-2.1	BH302_2.45-2.5	BH302_2.95-3.0	BH302_3.5-3.6	BH302_3.95-4.0
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-028	ES1825728-029	ES1825728-030	ES1825728-031	ES1825728-032
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**6.8**	**6.3**	**6.6**	**6.4**	**6.7**
pH (Fox)	----	0.1	pH Unit	**2.2**	**2.3**	**4.4**	**4.3**	**2.1**
Reaction Rate	----	1	Reaction Unit	**4**	**4**	**2**	**2**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH302_4.45-4.5	BH302_4.9-5.0	BH306_0.0-0.2	BH306_0.2-0.3	BH306_0.45-0.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-033	ES1825728-034	ES1825728-036	ES1825728-037	ES1825728-038
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.8	----	----	5.2
pH (Fox)	----	0.1	pH Unit	4.1	2.4	----	----	2.9
Reaction Rate	----	1	Reaction Unit	4	3	----	----	3
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	5.6	13.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	7	<5	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	16	6	----
Copper	7440-50-8	5	mg/kg	----	----	16	<5	----
Lead	7439-92-1	5	mg/kg	----	----	20	<5	----
Nickel	7440-02-0	2	mg/kg	----	----	13	<2	----
Zinc	7440-66-6	5	mg/kg	----	----	69	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	0.6	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	0.6	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH302_4.45-4.5	BH302_4.9-5.0	BH306_0.0-0.2	BH306_0.2-0.3	BH306_0.45-0.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-033	ES1825728-034	ES1825728-036	ES1825728-037	ES1825728-038
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**74.8**	**77.6**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**79.6**	**83.1**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**67.4**	**70.9**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**92.5**	**96.1**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	**87.0**	**90.9**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH302_4.45-4.5	BH302_4.9-5.0	BH306_0.0-0.2	BH306_0.2-0.3	BH306_0.45-0.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-033	ES1825728-034	ES1825728-036	ES1825728-037	ES1825728-038
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	75.2	78.2	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	96.1	104	----
Toluene-D8	2037-26-5	0.2	%	----	----	88.2	106	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	90.8	111	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH306_0.95-1.0	BH306_1.45-1.5	BH306_2.0-2.1	BH306_2.45-2.5	BH306_3.0-3.1
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-039	ES1825728-040	ES1825728-041	ES1825728-042	ES1825728-043
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**5.4**	**5.2**	**5.0**	**5.2**	**6.5**
pH (Fox)	----	0.1	pH Unit	**2.9**	**2.8**	**2.8**	**3.1**	**1.4**
Reaction Rate	----	1	Reaction Unit	**3**	**3**	**2**	**2**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH306_3.5-3.6	BH306_3.9-4.0	BH306_4.45-4.5	BHA302_0.0-0.2	BHA302_0.2-0.3
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-044	ES1825728-045	ES1825728-046	ES1825728-048	ES1825728-049
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.5	6.2	----	7.7
pH (Fox)	----	0.1	pH Unit	1.8	2.4	2.2	----	4.7
Reaction Rate	----	1	Reaction Unit	3	3	4	----	3
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	----	7.3	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	6	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	4	----
Copper	7440-50-8	5	mg/kg	----	----	----	18	----
Lead	7439-92-1	5	mg/kg	----	----	----	23	----
Nickel	7440-02-0	2	mg/kg	----	----	----	<2	----
Zinc	7440-66-6	5	mg/kg	----	----	----	168	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH306_3.5-3.6	BH306_3.9-4.0	BH306_4.45-4.5	BHA302_0.0-0.2	BHA302_0.2-0.3
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-044	ES1825728-045	ES1825728-046	ES1825728-048	ES1825728-049
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**74.8**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**79.8**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**64.7**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**92.1**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**88.5**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BH306_3.5-3.6	BH306_3.9-4.0	BH306_4.45-4.5	BHA302_0.0-0.2	BHA302_0.2-0.3
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-044	ES1825728-045	ES1825728-046	ES1825728-048	ES1825728-049
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	75.3	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	98.3	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	98.9	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA302_0.45-0.5	BHA302_0.95-1.0	BHA302_1.45-1.5	BHA302_2.0-2.1	BHA302_2.45-2.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-050	ES1825728-051	ES1825728-052	ES1825728-053	ES1825728-054
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	9.3	5.9	6.6	6.5	7.0
pH (Fox)	----	0.1	pH Unit	4.5	2.2	2.2	4.4	4.1
Reaction Rate	----	1	Reaction Unit	3	4	2	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	24.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	9	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	3	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA302_0.45-0.5	BHA302_0.95-1.0	BHA302_1.45-1.5	BHA302_2.0-2.1	BHA302_2.45-2.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-050	ES1825728-051	ES1825728-052	ES1825728-053	ES1825728-054
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**75.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**80.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**65.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**93.2**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**88.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA302_0.45-0.5	BHA302_0.95-1.0	BHA302_1.45-1.5	BHA302_2.0-2.1	BHA302_2.45-2.5
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-050	ES1825728-051	ES1825728-052	ES1825728-053	ES1825728-054
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.5	%	76.2	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	86.6	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	80.7	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	85.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA302_3.0-3.1	BHA302_3.5-3.6	BHA302_3.9-4.0	BHA302_4.45-4.5	BHA302_4.9-5.0
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-055	ES1825728-056	ES1825728-057	ES1825728-058	ES1825728-059
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	7.0	6.6	7.1	6.1
pH (Fox)	----	0.1	pH Unit	2.3	2.1	4.2	2.9	3.8
Reaction Rate	----	1	Reaction Unit	4	3	2	2	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_0.0-0.2	BHA304_0.45-0.5	BHA304_0.95-1.0	BHA304_1.5-1.6	BHA304_2.0-2.1
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-061	ES1825728-063	ES1825728-064	ES1825728-065	ES1825728-066
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	----	----	7.2	5.6	5.7
pH (Fox)	----	0.1	pH Unit	----	----	3.9	2.5	1.9
Reaction Rate	----	1	Reaction Unit	----	----	3	4	4
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	6.8	6.2	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	262	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	G.MORGAN	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	15	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	8	6	----	----	----
Copper	7440-50-8	5	mg/kg	16	33	----	----	----
Lead	7439-92-1	5	mg/kg	100	148	----	----	----
Nickel	7440-02-0	2	mg/kg	6	5	----	----	----
Zinc	7440-66-6	5	mg/kg	144	282	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	0.6	0.8	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	1.7	1.2	----	----	----
Pyrene	129-00-0	0.5	mg/kg	1.6	1.3	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	0.6	0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.0	0.6	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_0.0-0.2	BHA304_0.45-0.5	BHA304_0.95-1.0	BHA304_1.5-1.6	BHA304_2.0-2.1
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-061	ES1825728-063	ES1825728-064	ES1825728-065	ES1825728-066
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**0.8**	**0.6**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**0.5**	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**0.8**	**0.5**	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**8.1**	**5.5**	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	**1.0**	**0.7**	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**1.3**	**1.0**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.6**	**1.3**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	**160**	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	**160**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	**170**	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	**150**	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	**320**	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_0.0-0.2	BHA304_0.45-0.5	BHA304_0.95-1.0	BHA304_1.5-1.6	BHA304_2.0-2.1
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-061	ES1825728-063	ES1825728-064	ES1825728-065	ES1825728-066
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.5	%	75.7	75.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	80.7	81.2	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	68.1	71.2	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	93.8	93.4	----	----	----
Anthracene-d10	1719-06-8	0.5	%	88.5	88.5	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	74.5	75.1	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	96.1	99.8	----	----	----
Toluene-D8	2037-26-5	0.2	%	94.9	98.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	99.4	102	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_2.45-2.5	BHA304_3.0-3.1	BHA304_3.5-3.6	BHA304_3.95-4.0	BHA304_4.5-4.6
			Client sampling date / time	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825728-067	ES1825728-068	ES1825728-069	ES1825728-070	ES1825728-071
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**6.0**	**5.9**	**5.8**	**5.9**	**5.9**
pH (Fox)	----	0.1	pH Unit	**2.2**	**2.1**	**2.2**	**2.2**	**2.2**
Reaction Rate	----	1	Reaction Unit	**4**	**4**	**4**	**4**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_4.9-5.0	BH104_0.0-0.2	BH104_0.2-0.3	----	----
			Client sampling date / time	30-Aug-2018 00:00	31-Jul-2018 00:00	31-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1825728-072	ES1825728-074	ES1825728-075	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	----	----	----	----
pH (Fox)	----	0.1	pH Unit	2.1	----	----	----	----
Reaction Rate	----	1	Reaction Unit	3	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	3.9	6.2	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	155	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	G.MORGAN	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	1	----	----
Chromium	7440-47-3	2	mg/kg	----	5	7	----	----
Copper	7440-50-8	5	mg/kg	----	72	120	----	----
Lead	7439-92-1	5	mg/kg	----	25	36	----	----
Nickel	7440-02-0	2	mg/kg	----	<2	2	----	----
Zinc	7440-66-6	5	mg/kg	----	108	166	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	0.4	0.6	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_4.9-5.0	BH104_0.0-0.2	BH104_0.2-0.3	----	----
			Client sampling date / time	30-Aug-2018 00:00	31-Jul-2018 00:00	31-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1825728-072	ES1825728-074	ES1825728-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	**180**	**340**	----	----
C29 - C36 Fraction	----	100	mg/kg	----	**240**	**370**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	**420**	**710**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	**350**	**600**	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	**140**	**200**	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	**490**	**800**	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	----	----
EP075(SIM)S: Phenolic Compound Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA304_4.9-5.0	BH104_0.0-0.2	BH104_0.2-0.3	----	----
			Client sampling date / time	30-Aug-2018 00:00	31-Jul-2018 00:00	31-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1825728-072	ES1825728-074	ES1825728-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.5	%	----	80.4	80.6	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	85.2	83.1	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	68.8	71.9	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	85.5	85.4	----	----
Anthracene-d10	1719-06-8	0.5	%	----	86.1	87.1	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	84.0	92.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	96.4	109	----	----
Toluene-D8	2037-26-5	0.2	%	----	97.8	106	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	99.0	109	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH108_0.0-0.2 - 22-Aug-2018 00:00	Mid brown sandy soil.
EA200: Description	BH101_0.0-0.2 - 29-Aug-2018 00:00	Mid brown sandy soil.
EA200: Description	BHA304_0.0-0.2 - 30-Aug-2018 00:00	Mid brown sandy soil.
EA200: Description	BH104_0.0-0.2 - 31-Jul-2018 00:00	Mid brown sandy soil.

Surrogate Control Limits

Sub-Matrix: COMPOSITE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1825728**	Page	: 1 of 11
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 31-Aug-2018
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 10-Sep-2018
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 80		
No. of samples analysed	: 60		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA003 :pH (field/fox) (QC Lot: 1919242)									
ES1825728-013	BH301_0.95-1.0	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.00	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.9	2.9	0.00	0% - 20%
ES1825728-029	BH302_2.45-2.5	EA003: pH (F)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.3	2.2	4.44	0% - 20%
EA003 :pH (field/fox) (QC Lot: 1919243)									
ES1825728-043	BH306_3.0-3.1	EA003: pH (F)	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	1.4	1.4	0.00	0% - 50%
ES1825728-054	BHA302_2.45-2.5	EA003: pH (F)	----	0.1	pH Unit	7.0	6.9	1.44	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.1	4.2	2.41	0% - 20%
EA003 :pH (field/fox) (QC Lot: 1919244)									
ES1825728-069	BHA304_3.5-3.6	EA003: pH (F)	----	0.1	pH Unit	5.8	5.8	0.00	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.2	2.2	0.00	0% - 20%
ES1826106-009	Anonymous	EA003: pH (F)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.4	3.4	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1916932)									
ES1825728-010	BH301_0.0-0.2	EA055: Moisture Content	----	0.1	%	6.3	6.9	9.59	No Limit
ES1825728-075	BH104_0.2-0.3	EA055: Moisture Content	----	0.1	%	6.2	4.7	28.4	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1919079)									
ES1825728-004	BH101_0.0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1919079) - continued									
ES1825728-004	BH101_0.0-0.2	EG005T: Zinc	7440-66-6	5	mg/kg	32	28	12.7	No Limit
ES1825728-061	BHA304_0.0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	100	120	18.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	144	158	9.12	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1919239)									
ES1825728-074	BH104_0.0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	6	18.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	72	82	13.2	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	25	30	19.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	108	101	6.72	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1919080)									
ES1825728-004	BH101_0.0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1919240)									
ES1825728-074	BH104_0.0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.5	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1917223)									
ES1825728-079	COMP 2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1917222)									
ES1825728-079	COMP 2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1917222) - continued									
ES1825728-079	COMP 2	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1914407)									
ES1825728-004	BH101_0.0-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.6	0.8	26.3	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.7	2.3	31.9	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.6	2.2	31.8	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.5	0.8	37.4	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	1.0	41.1	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.0	1.4	38.3	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	0.6	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1914407) - continued									
ES1825728-061	BHA304_0.0-0.2	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.8	1.2	37.5	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	0.8	43.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.8	1.1	41.2	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.1	# 12.2	40.4	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.0	1.6	43.7	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1915278)									
ES1826014-007	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1914408)									
ES1825728-004	BH101_0.0-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1914563)									
ES1825728-004	BH101_0.0-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1915277)									
ES1826014-007	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1915277) - continued									
ES1826014-007	Anonymous	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1914408)									
ES1825728-004	BH101_0.0-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1914563)									
ES1825728-004	BH101_0.0-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1915277)									
ES1826014-007	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	120	100	16.9	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1914563)									
ES1825728-004	BH101_0.0-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1825728-061	BHA304_0.0-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1919079)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.7	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	106	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	110	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.0	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.9	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	109	80	122
EG005T: Total Metals by ICP-AES (QCLot: 1919239)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.0	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	92.7	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.0	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	101	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	104	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	110	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1919080)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	73.2	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1919240)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	72.0	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1917223)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	102	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 1917222)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	66	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 1917222) - continued								
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.1	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	90.1	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	82.3	54	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1914407)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	123	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	123	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	118	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	122	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	120	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	120	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	123	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	125	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	109	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	120	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	108	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	124	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	116	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	117	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	118	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	113	63	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1915278)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	96.2	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.6	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	92.7	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.4	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	95.6	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	97.8	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	98.5	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	99.4	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.1	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	92.1	75	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1915278) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	94.4	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.7	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	89.9	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	97.0	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	96.0	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.1	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914408)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	91.3	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	92.6	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914563)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	89.8	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1915277)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	102	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	106	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	93.6	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914408)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.6	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.8	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	96.4	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914563)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	94.1	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1915277)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	107	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	108	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	81.0	63	131
EP080: BTEXN (QCLot: 1914563)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.4	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.1	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	85.0	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	84.1	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	89.9	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	81.4	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1919079)							
ES1825728-004	BH101_0.0-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	122	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.4	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.0	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.5	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	110	70	130
EG005T: Total Metals by ICP-AES (QCLot: 1919239)							
ES1825728-074	BH104_0.0-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	96.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	100	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	92.1	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	99.5	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1919080)							
ES1825728-004	BH101_0.0-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	73.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1919240)							
ES1825728-074	BH104_0.0-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	75.7	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1917223)							
ES1825728-079	COMP 2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	95.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1917222)							
ES1825728-079	COMP 2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	86.3	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	87.7	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	99.2	70	130
		EP068: Endrin	72-20-8	2 mg/kg	90.2	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	93.3	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1914407)							
ES1825728-004	BH101_0.0-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.2	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1915278)							
ES1826014-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.1	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914408)							
ES1825728-004	BH101_0.0-0.2	EP071: C10 - C14 Fraction	----	523 mg/kg	106	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	118	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	127	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914563)							
ES1825728-004	BH101_0.0-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	87.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1915277)							
ES1826014-007	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	82.2	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	114	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	125	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914408)							
ES1825728-004	BH101_0.0-0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	109	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	122	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	118	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914563)							
ES1825728-004	BH101_0.0-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	90.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1915277)							
ES1826014-007	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	95.3	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	107	52	132
EP080: BTEXN (QCLot: 1914563)							
ES1825728-004	BH101_0.0-0.2	EP080: Benzene	71-43-2	2.5 mg/kg	82.9	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	82.2	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	81.7	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	81.2	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	84.1	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	71.2	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1825728**	Page	: 1 of 10
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 31-Aug-2018
Site	:	Issue Date	: 10-Sep-2018
Sampler	: JULIAN FOWLER	No. of samples received	: 80
Order number	:	No. of samples analysed	: 60

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES1825728--061	BHA304_0.0-0.2	**Sum of polycyclic aromatic hydrocarbons**	----	40.4 %	0% - 20%	**RPD exceeds LOR based limits**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	----	----	----	06-Sep-2018	14-Aug-2018	**23**
EG035T: Total Recoverable Mercury by FIMS						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	06-Sep-2018	28-Aug-2018	**9**	07-Sep-2018	28-Aug-2018	**10**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	----	----	----
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	06-Sep-2018	14-Aug-2018	**23**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	----	----	----
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	06-Sep-2018	14-Aug-2018	**23**
EP080: BTEXN						
Soil Glass Jar - Unpreserved						
BH104_0.0-0.2, BH104_0.2-0.3	05-Sep-2018	14-Aug-2018	**22**	06-Sep-2018	14-Aug-2018	**23**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen on receipt at ALS (EA003)								
BH301_0.95-1.0,	BH301_1.45-1.5,	**30-Aug-2018**	**07-Sep-2018**	25-May-2021	✓	**07-Sep-2018**	06-Dec-2018	✓
BH301_2.0-2.1,	BH301_2.45-2.5,							
BH301_3.0-3.1,	BH301_3.5-3.6,							
BH302_0.95-1.0,	BH302_1.45-1.5,							
BH302_2.0-2.1,	BH302_2.45-2.5,							
BH302_2.95-3.0,	BH302_3.5-3.6,							
BH302_3.95-4.0,	BH302_4.45-4.5,							
BH302_4.9-5.0,	BH306_0.45-0.5,							
BH306_0.95-1.0,	BH306_1.45-1.5,							
BH306_2.0-2.1,	BH306_2.45-2.5,							
BH306_3.0-3.1,	BH306_3.5-3.6,							
BH306_3.9-4.0,	BH306_4.45-4.5,							
BHA302_0.45-0.5,	BHA302_0.95-1.0,							
BHA302_1.45-1.5,	BHA302_2.0-2.1,							
BHA302_2.45-2.5,	BHA302_3.0-3.1,							
BHA302_3.5-3.6,	BHA302_3.9-4.0,							
BHA302_4.45-4.5,	BHA302_4.9-5.0,							
BHA304_0.95-1.0,	BHA304_1.5-1.6,							
BHA304_2.0-2.1,	BHA304_2.45-2.5,							
BHA304_3.0-3.1,	BHA304_3.5-3.6,							
BHA304_3.95-4.0,	BHA304_4.5-4.6,							
BHA304_4.9-5.0								
Soil Glass Jar - Frozen on receipt (EA003)								
BHA302_0.2-0.3		**30-Aug-2018**	**07-Sep-2018**	25-May-2021	✓	**07-Sep-2018**	06-Dec-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**----**	----	----	**06-Sep-2018**	12-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA055)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**----**	----	----	**06-Sep-2018**	13-Sep-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5,							
COMP 2								
Soil Glass Jar - Unpreserved (EA055)								
COMP 3		**31-Aug-2018**	**----**	----	----	**06-Sep-2018**	14-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA055)								
BH104_0.0-0.2,	BH104_0.2-0.3	**31-Jul-2018**	**----**	----	----	**06-Sep-2018**	14-Aug-2018	✗
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
BH108_0.0-0.2		**22-Aug-2018**	**----**	----	----	**05-Sep-2018**	18-Feb-2019	✓
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
BH101_0.0-0.2		**29-Aug-2018**	**----**	----	----	**05-Sep-2018**	25-Feb-2019	✓
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
BHA304_0.0-0.2		**30-Aug-2018**	**----**	----	----	**05-Sep-2018**	26-Feb-2019	✓
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
BH104_0.0-0.2		**31-Jul-2018**	**----**	----	----	**05-Sep-2018**	27-Jan-2019	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**06-Sep-2018**	25-Feb-2019	✓	**06-Sep-2018**	25-Feb-2019	✓
Soil Glass Jar - Unpreserved (EG005T)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**06-Sep-2018**	26-Feb-2019	✓	**06-Sep-2018**	26-Feb-2019	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EG005T)								
BH104_0.0-0.2,	BH104_0.2-0.3	**31-Jul-2018**	**06-Sep-2018**	27-Jan-2019	✓	**06-Sep-2018**	27-Jan-2019	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**06-Sep-2018**	26-Sep-2018	✓	**07-Sep-2018**	26-Sep-2018	✓
Soil Glass Jar - Unpreserved (EG035T)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**06-Sep-2018**	27-Sep-2018	✓	**07-Sep-2018**	27-Sep-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EG035T)								
BH104_0.0-0.2,	BH104_0.2-0.3	**31-Jul-2018**	**06-Sep-2018**	28-Aug-2018	×	**07-Sep-2018**	28-Aug-2018	×
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
COMP 2		**30-Aug-2018**	**06-Sep-2018**	13-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP066)								
COMP 3		**31-Aug-2018**	**06-Sep-2018**	14-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
COMP 2		**30-Aug-2018**	**06-Sep-2018**	13-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP068)								
COMP 3		**31-Aug-2018**	**06-Sep-2018**	14-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**05-Sep-2018**	12-Sep-2018	✓	**06-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**05-Sep-2018**	13-Sep-2018	✓	**06-Sep-2018**	15-Oct-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH104_0.0-0.2,	BH104_0.2-0.3	**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**05-Sep-2018**	15-Oct-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**05-Sep-2018**	12-Sep-2018	✓	**06-Sep-2018**	12-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**05-Sep-2018**	13-Sep-2018	✓	**06-Sep-2018**	13-Sep-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EP071)								
BH104_0.0-0.2		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**05-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH104_0.0-0.2		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**06-Sep-2018**	14-Aug-2018	×
Soil Glass Jar - Unpreserved (EP071)								
BH104_0.2-0.3		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**05-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH104_0.2-0.3		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**06-Sep-2018**	14-Aug-2018	×
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**05-Sep-2018**	12-Sep-2018	✓	**06-Sep-2018**	12-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**05-Sep-2018**	13-Sep-2018	✓	**06-Sep-2018**	13-Sep-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EP071)								
BH104_0.0-0.2		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**05-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH104_0.0-0.2		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**06-Sep-2018**	14-Aug-2018	×
Soil Glass Jar - Unpreserved (EP071)								
BH104_0.2-0.3		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**05-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH104_0.2-0.3		**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**06-Sep-2018**	14-Aug-2018	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
BH101_0.0-0.2,	BH101_0.45-0.5	**29-Aug-2018**	**05-Sep-2018**	12-Sep-2018	✓	**06-Sep-2018**	12-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080)								
BH301_0.0-0.2,	BH301_0.45-0.5,	**30-Aug-2018**	**05-Sep-2018**	13-Sep-2018	✓	**06-Sep-2018**	13-Sep-2018	✓
BH302_0.0-0.2,	BH302_0.2-0.3,							
BH306_0.0-0.2,	BH306_0.2-0.3,							
BHA302_0.0-0.2,	BHA302_0.45-0.5,							
BHA304_0.0-0.2,	BHA304_0.45-0.5							
Soil Glass Jar - Unpreserved (EP080)								
BH104_0.0-0.2,	BH104_0.2-0.3	**31-Jul-2018**	**05-Sep-2018**	14-Aug-2018	×	**06-Sep-2018**	14-Aug-2018	×

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH field/fox	EA003	6	56	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Compositing	* EN020	SOIL	Equal weights of each original soil are taken, then mixed and homogenised. The combined mixture is labelled as a new sample.
Drying only	EN020D	SOIL	In house

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Security: Intact / Broken / None
Temperature on receipt: Ambient / Chilled / Frozen
Cooling Method: Ice / Ice pack / None
Random Sample Temperature on receipt
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	Kjones		MC
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:06pm	DATE/TIME:	DATE/TIME: 31/8/18 7:30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH108_0.0-0.2	22/8/18	S	B	1	Please hold all samples.
2	BH108_0.2-0.3	↓	S	B	↓	
3	BH108_0.5-0.6	↓	S	B	↓	
4	BH101_0.0-0.2	29/8/18	↓	Jar, B	2	
5	BH101_0.2-0.3	↓	↓	↓	2	
6	BH101_0.45-0.5	↓	↓	↓	2	
7	BH101_0.95-1.0	↓	↓	↓	2	
8	BH101_1.45-1.5	↓	↓	↓	1	
9	FDG	↓	↓	↓	1	
10	BH301_0.0-0.2	30/8/18	↓	B	2	
11	BH301_0.2-0.3	↓	↓	B	2	
12	BH301_0.45-0.5	↓	↓	↓, ASS	3	
13	BH301_0.95-1.0	↓	↓	↓, ASS	3	
14	BH301_1.45-1.5	↓	↓	↓	1	
15	BH301_2.0-2.1	↓	↓	↓	1	
16	BH301_2.45-2.5	↓	↓	↓	1	
17	BH301_3.0-3.1	↓	↓	↓	1	
18	BH301_3.5-3.6	↓	↓	↓	1	
				TOTAL		

LAB OF ORIGIN: NEWCASTLE

E-MAILED

Environmental Division Sydney
Work Order Reference
ES1825728
Telephone: +61-2-8784 8555

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

client requested – ASB bags @ EN

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
DF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact ☐
Cooler Temperature on Receipt (°C)
Sample Temperature on Receipt (°C)
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	KJONG		MC
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1.00pm	DATE/TIME:	DATE/TIME: 31/8/18 2:30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). — Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
19	BH301_3.95-4.0	30/8/18	S	ASS	1									
20	BH301_4.45-4.5				1									
21	BH301_4.9-5.0				1									
22	[redacted] FD8			Jar	1									
23	BH302_0.0-0.2			B	2									
24	BH302_0.2-0.3			[redacted]	2									
25	BH302_0.45-0.5			ASS	3									
26	BH302_0.95-1.0				2									
27	BH302_1.45-1.5				1									
28	BH302_2.0-2.1				1									
29	BH302_2.45-2.5				1									
30	BH302_2.95-3.0				1									
31	BH302_3.45-3.6				1									
32	BH302_3.95-4.0				1									
33	BH302_4.45-4.5				1									
34	BH302_4.9-5.0				1									
35	[redacted] FD7				1									
36	BH306_0.0-0.2			Jar, B	2									
				TOTAL										

LAB OF ORIGIN:

E-MAILED

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-iss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Cooling Method: Ice Gel None
Free ice / frozen ice bricks present on arrival? Yes No
Seals intact? Yes No
Random Sample Temperature on Receipt
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	Kylie Jones		[illegible] MC
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:08pm	DATE/TIME:	DATE/TIME: 31/8/18 7:30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	BH306_0.2-0.3	30/8/18	S	Jar, B	2		
38	BH306_0.45-0.5			↓, ↓, ASS	3		
39	BH306_0.95-1.0				1		
40	BH306_1.45-1.5				1		
41	BH306_2.0-2.1				1		
42	BH306_2.45-2.5				1		
43	BH306_3.0-3.1				1		
44	BH306_3.5-3.6				1		
45	BH306_3.9-4.0				1		
46	BH306_4.45-4.5				1		
47	FD9			Jar	1		
48	BHA302_0.0-0.2			Jar, B	2		
49	BHA302_0.2-0.3				2		
50	BHA302_0.45-0.5			↓, ↓, ASS	3		
51	BHA302_0.95-1.0				1		
52	BHA302_1.45-1.5				1		
53	BHA302_2.0-2.1				1		
54	BHA302_2.45-2.5				1		
				TOTAL			

LAB OF ORIGIN: NEWCASTLE

E-MAILED

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (CIRCLE)
Glacier Seal Intact: Yes No N/A
Free ice / frozen ice in sample containers: Yes No N/A
Sample Temperature on Receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	[illegible]		MC
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1.06pm	DATE/TIME:	DATE/TIME: 31/8/18 7.30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
55	BHA302_3.0-3.1	30/8/18	S	ASS	1		
56	BHA302_3.5-3.6				1		
57	BHA302_3.9-4.0				1		
58	BHA302_4.45-4.5				1		
59	BHA302_4.9-5.0				1		
60	FD10			Jar	1		
61	BHA304_0.0-0.2			B	2		
62	BHA304_0.2-0.3				2		
63	BHA304_0.45-0.5			ASS	3		
64	BHA304_0.95-1.0				3		
65	BHA304_1.5-1.6				1		
66	BHA304_2.0-2.1				1		
67	BHA304_2.45-2.5				1		
68	BHA304_3.0-3.1				1		
69	BHA304_3.5-3.6				1		
70	BHA304_3.95-4.0				1		
71	BHA304_4.5-4.6				1		
72	BHA304_4.9-5.0				1		
				TOTAL			

LAB OF ORIGIN: NEWCASTLE

E-MAILED

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

Asb # 1, 4, 61, 74
ASS 13, 18, 26-34, 38-46, 49-52, 64-72

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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☑NEWCASTLE 5585 Mayland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, nil.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Cooling: Ice / Icepack / None
Free ice / Chilled on arrival? Yes / No
Random sample temperature on receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	K Jones		
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:06pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).						Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH/BTEXN PAH, 8 metals	Asbestos Presence/absence	ASS Screening	Comp 2 (OCPs, PCB)	Comp 3 (OCPs PCB)		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH108_0.0-0.2	22/8/18	S	B	1		X					Please hold all ASS samples on Shand
2	BH108_0.2-0.3	↓	S	B	↓							
3	BH108_0.5-0.6	↓	S	B	↓							
4	BH101_0.0-0.2	29/8/18	↓	Jar, B	2	X	X	✓	X			
5	BH101_0.2-0.3	↓	↓	↓	2							
6	BH101_0.45-0.5	↓	↓	↓	2	X	X					
7	BH101_0.95-1.0	↓	↓	↓	2							
8	BH101_1.45-1.5	↓	↓	↓	1							
9	FD6	↓	↓	↓	1							
10	BH301_0.0-0.2	30/8/18	↓	B	2	X	X			X		
11	BH301_0.2-0.3	↓	↓	B	2							
12	BH301_0.45-0.5	↓	↓	↓ ASS	3	X	X					
13	BH301_0.95-1.0	↓	↓	↓ ASS	3			X				
14	BH301_1.45-1.5	↓	↓	↓	1			X				
15	BH301_2.0-2.1	↓	↓	↓	1			X				
16	BH301_2.45-2.5	↓	↓	↓	1			X				
17	BH301_3.0-3.1	↓	↓	↓	1			X				
18	BH301_3.5-3.6	↓	↓	↓	1			X				
				TOTAL								

Subcon / Forward Lab / Split WO
Lab / Analysis:
Organised By / Date:
Relinquished By / Date:
Consignee / Courier:
VTO No:
Attach By PO Internal Sheet:

Environmental Division Sydney
Work Order Reference
ES1825728
Telephone : +61-2-8784 8555

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, nfl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 (2) 3 4 5 6 7
OF: 1 2 3 4 (5) 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact — Yes / No / N/A
Cooler Temperature on Receipt (°C) — Yes / No / N/A
Random Sample Temperature on Receipt (°C) — 6
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	[illegible]		
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1.00pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH/BTEXN TPH, Sulphate	Asbestos Fibrescreen/Asbestos	ASS Screening	Comp 2 (OCPs PCB)	Comp 3 (OCPs PCB)			Additional Information
19	BH301_3.95-4.0	30/8/18	S	ASS	1								
20	BH301_4.45-4.5				1								
21	BH301_4.9-5.0				1								
22	[redacted] FD8			Jar	1								
23	BH302_0.0-0.2			B	2	X				X			
24	BH302_0.2-0.3				2	X							
25	BH302_0.45-0.5			[redacted] ASS	3								
26	BH302_0.95-1.0				2			X					
27	BH302_1.45-1.5				1			X					
28	BH302_2.0-2.1				1			X					
29	BH302_2.45-2.5				1			X					
30	BH302_2.95-3.0				1			X					
31	BH302_3.45-3.6				1			X					
32	BH302_3.95-4.0				1			X					
33	BH302_4.45-4.5				1			X					
34	BH302_4.9-5.0				1			X					
35	[redacted] FD7				1								
36	BH306_0.0-0.2			Jar B	2	X				X			
				TOTAL									

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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☐ NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐ NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐ PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐ SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐ TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐ WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
OFFICE: Newcastle	☑ Standard TAT (List due date):
PROJECT: 2219573	☐ Non Standard or urgent TAT (List due date):
ORDER NUMBER:	ALS QUOTE NO.:
PROJECT MANAGER: Alison Monkley	CONTACT PH: 49799999
SAMPLER: Julian Fowler	SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car	
Email Invoice to (will default to PM if no other addresses are listed): ap-lss@ghd.com	

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
SF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seals Intact? YES NO N/A
Free ice / frozen ice blocks present upon receipt? YES NO N/A
Random Sample Temperature on receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	Kylone		
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:08pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH / BTEXN PAH, 8 metals	Asbestos (Presence/absence)	OPS screen	Comp 2 (OCP's, PCB)	Comp 3 (OCP's, PCB)			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	BH306_0.2-0.3	30/8/18	S	Jar, B	2	X	✓						
38	BH306_0.45-0.5	↓	↓	↓, ↓, ASS	3			X					
39	BH306_0.95-1.0				1			X					
40	BH306_1.45-1.5				1			X					
41	BH306_2.0-2.1				1			X					
42	BH306_2.45-2.5				1			X		✓			
43	BH306_3.0-3.1				1			X					
44	BH306_3.5-3.6				1			X					
45	BH306_3.9-4.0				1			X					
46	BH306_4.45-4.5			↓	1			X					
47	FD9			Jar	1								
48	BHA302_0.0-0.2			Jar, B	2	X	✓						
49	BHA302_0.2-0.3			↓, ↓,	2			X	✓				
50	BHA302_0.45-0.5			↓, ↓, ASS	3	X	✓	X	✓				
51	BHA302_0.95-1.0				1			X					
52	BHA302_1.45-1.5				1			X					
53	BHA302_2.0-2.1				1			X					
54	BHA302_2.45-2.5	↓	↓	↓	1			X					
				TOTAL									

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

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CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seals Intact? Yes No N/A
Free ice / chemical blue present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other Comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	[illegible]		
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:06pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH/BTEX N	PAH, Sme/ab	Asbestos	Presence/absence	ASS screening	Comp 2 (OCP, PCB)	Comp 3 (OCP, PCB)		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
55	BHA302_3.0-3.1	30/8/18	S	ASS	1					X				
56	BHA302_3.5-3.6				1					X				
57	BHA302_3.9-4.0				1					X				
58	BHA302_4.45-4.5				1					X				
59	BHA302_4.9-5.0				1					X				
60	FD10			Jar	1									
61	BHA304_0.0-0.2			B	2	X	X							
62	BHA304_0.2-0.3				2									
63	BHA304_0.45-0.5			ASS	3	X								
64	BHA304_0.95-1.0				3					X				
65	BHA304_1.5-1.6				1					X				
66	BHA304_2.0-2.1				1					X				
67	BHA304_2.45-2.5				1					X				
68	BHA304_3.0-3.1				1					X				
69	BHA304_3.5-3.6				1					X				
70	BHA304_3.95-4.0				1					X				
71	BHA304_4.5-4.6				1					X				
72	BHA304_4.9-5.0				1					X				
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
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CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
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☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody seal intact? Yes No N/A
Free ice / frozen coolant present on receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler	[illegible]		
DATE/TIME: 31/8/18 1305	DATE/TIME: 31/8/18 1:06 pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TPH/BTEXN PAH, metals	Asbestos presence/absence	ASS screening	Comp 2 (OCPs, PCB)	Comp 3 (OCPs, PCB)			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
73	FD11	30/8/18	S	Jar	1								
74	BH104_0.0-0.2	31/8/18	S	" S	2	X	X		X				
75	BH104_0.2-0.3	↓	S	" ↓	2	X							
76	BH104_0.45-0.5		S	"	2								
77	BH104_0.95-1.0		S	"	2								
78	FD12		S		1								
				TOTAL									

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1826547**	Page	: 1 of 12
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 07-Sep-2018 16:18
Order number	:	Date Analysis Commenced	: 18-Sep-2018
C-O-C number	: ----	Issue Date	: 22-Sep-2018 11:49
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 28		
No. of samples analysed	: 11		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg result for ES1826547 #4 has been confirmed by reanalysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP101_0.0-0.2	TP101_0.5-0.6	TP102_0.0-0.2	TP103_0.0-0.2	TP104_0.0-0.2
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-001	ES1826547-003	ES1826547-004	ES1826547-007	ES1826547-011
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.0	6.5	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.0	----	11.0	5.9	<1.0
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	2.0	0.3	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	0.4	<0.1	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	2.5	0.4	----	----	----
Exchangeable Sodium Percent	----	0.1	%	1.4	2.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	----	4	<2	<2
Copper	7440-50-8	5	mg/kg	6	----	61	<5	10
Lead	7439-92-1	5	mg/kg	6	----	16	<5	<5
Nickel	7440-02-0	2	mg/kg	<2	----	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	36	----	38	<5	29
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	0.3	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP101_0.0-0.2	TP101_0.5-0.6	TP102_0.0-0.2	TP103_0.0-0.2	TP104_0.0-0.2
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-001	ES1826547-003	ES1826547-004	ES1826547-007	ES1826547-011
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**85.2**	----	**79.7**	**78.0**	**77.9**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP101_0.0-0.2	TP101_0.5-0.6	TP102_0.0-0.2	TP103_0.0-0.2	TP104_0.0-0.2
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-001	ES1826547-003	ES1826547-004	ES1826547-007	ES1826547-011
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
2-Chlorophenol-D4	93951-73-6	0.5	%	89.3	----	82.5	82.6	81.9
2.4.6-Tribromophenol	118-79-6	0.5	%	75.9	----	76.7	72.8	65.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	99.0	----	90.8	91.0	91.3
Anthracene-d10	1719-06-8	0.5	%	94.1	----	86.5	88.0	87.2
4-Terphenyl-d14	1718-51-0	0.5	%	82.6	----	76.1	75.9	75.9
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	95.1	----	109	103	109
Toluene-D8	2037-26-5	0.2	%	94.6	----	108	98.5	104
4-Bromofluorobenzene	460-00-4	0.2	%	95.9	----	110	103	106

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP105_0.0-0.2	TP105_0.6-0.7	TP106_0.0-0.2	FD20	COMP 4
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	18-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-014	ES1826547-016	ES1826547-018	ES1826547-022	ES1826547-027
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.6	6.7	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	----	14.9	13.8	5.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----
Sample weight (dry)	----	0.01	g	----	----	348	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	C.OWLER	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.5	6.9	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	0.2	1.4	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	<0.1	<0.1	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.2	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	0.8	8.4	----	----	----
Exchangeable Sodium Percent	----	0.1	%	3.8	2.0	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	25	20	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	----
Chromium	7440-47-3	2	mg/kg	<2	----	5	5	----
Copper	7440-50-8	5	mg/kg	<5	----	194	206	----
Lead	7439-92-1	5	mg/kg	<5	----	246	287	----
Nickel	7440-02-0	2	mg/kg	<2	----	<2	3	----
Zinc	7440-66-6	5	mg/kg	21	----	3130	3740	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP105_0.0-0.2	TP105_0.6-0.7	TP106_0.0-0.2	FD20	COMP 4
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	18-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-014	ES1826547-016	ES1826547-018	ES1826547-022	ES1826547-027
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP105_0.0-0.2	TP105_0.6-0.7	TP106_0.0-0.2	FD20	COMP 4
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	18-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-014	ES1826547-016	ES1826547-018	ES1826547-022	ES1826547-027
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	**105**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP105_0.0-0.2	TP105_0.6-0.7	TP106_0.0-0.2	FD20	COMP 4
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	06-Sep-2018 00:00	18-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826547-014	ES1826547-016	ES1826547-018	ES1826547-022	ES1826547-027
				Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	81.8
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	80.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	78.5	----	74.8	74.1	----
2-Chlorophenol-D4	93951-73-6	0.5	%	82.0	----	78.7	77.7	----
2.4.6-Tribromophenol	118-79-6	0.5	%	65.2	----	66.0	65.3	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	91.2	----	87.8	86.8	----
Anthracene-d10	1719-06-8	0.5	%	86.8	----	83.8	81.4	----
4-Terphenyl-d14	1718-51-0	0.5	%	75.7	----	73.2	71.7	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	126	----	113	112	----
Toluene-D8	2037-26-5	0.2	%	119	----	109	104	----
4-Bromofluorobenzene	460-00-4	0.2	%	124	----	108	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	COMP 5	----	----	----	----
			Client sampling date / time	18-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1826547-028	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.1**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**118**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**87.1**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	COMP 5	----	----	----	----
			Client sampling date / time	18-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1826547-028	--------	--------	--------	--------
				Result	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**89.9**	**----**	**----**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP106_0.0-0.2 - 06-Sep-2018 00:00	Mid brown sandy soil

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1826547**	Page	: 1 of 9
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 07-Sep-2018
Order number	:	Date Analysis Commenced	: 18-Sep-2018
C-O-C number	: ----	Issue Date	: 22-Sep-2018
Sampler	: JULIAN FOWLER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 28		
No. of samples analysed	: 11		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA002: pH 1:5 (Soils) (QC Lot: 1936505)									
ES1826044-014	Anonymous	EA002: pH Value	----	0.1	pH Unit	6.3	6.2	0.00	0% - 20%
ES1827443-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.9	5.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1937107)									
ES1826044-003	Anonymous	EA055: Moisture Content	----	0.1	%	21.3	20.3	4.94	0% - 20%
ES1826547-007	TP103_0.0-0.2	EA055: Moisture Content	----	0.1	%	5.9	5.7	3.00	No Limit
ED007: Exchangeable Cations (QC Lot: 1941868)									
ES1826044-014	Anonymous	ED007: Exchangeable Sodium Percent	----	0.1	%	5.7	5.7	0.00	0% - 20%
		ED007: Exchangeable Calcium	----	0.1	meq/100g	4.6	4.5	0.00	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	2.7	2.6	0.00	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.4	0.4	0.00	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	7.9	7.8	0.00	0% - 20%
ES1827443-004	Anonymous	ED007: Exchangeable Sodium Percent	----	0.1	%	5.7	5.4	5.40	0% - 20%
		ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	0.8	0.8	0.00	No Limit
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.00	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	1.0	1.0	0.00	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1941966)									
ES1826547-001	TP101_0.0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	7	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1941966) - continued									
ES1826547-001	TP101_0.0-0.2	EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	36	39	8.69	No Limit
ES1827574-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	11	32.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	6	35.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	17	13.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	7	28.8	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1941965)									
ES1826547-001	TP101_0.0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1827574-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1937046)									
ES1827553-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1937045)									
ES1827553-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1937041)									
ES1826547-001	TP101_0.0-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1937041) - continued									
ES1826547-001	TP101_0.0-0.2	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1936161)									
ES1826044-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1826044-045	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1937040)									
ES1826547-001	TP101_0.0-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1936161)									
ES1826044-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1826044-045	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1937040)									
ES1826547-001	TP101_0.0-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1936161)									
ES1826044-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080: BTEXN (QC Lot: 1936161) - continued									
ES1826044-001	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1826044-045	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED007: Exchangeable Cations (QCLot: 1941868)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	1 meq/100g	93.0	76	120
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.67 meq/100g	94.0	75	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.51 meq/100g	94.7	80	120
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.87 meq/100g	92.0	80	120
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Sodium Percent	----	0.1	%	<0.1	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 1941966)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.3	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.7	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	81.5	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.3	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.5	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.1	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1941965)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	74.3	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1937046)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	103	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 1937045)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.3	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	69	115

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 1937045) - continued								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.0	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.9	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	104	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	103	54	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1937041)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	83.2	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	80.8	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	80.6	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	80.8	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	83.3	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	83.3	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	82.3	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	83.1	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	86.0	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	89.9	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	83.9	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.7	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	81.6	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	80.0	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	77.7	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	80.5	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1936161)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.2	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937040)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	104	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	116	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	100	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1936161)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.3	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937040)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	104	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	112	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	105	63	131
EP080: BTEXN (QCLot: 1936161)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.5	62	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1936161) - continued								
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.2	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.2	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	91.5	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.6	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	96.1	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1941966)							
ES1826547-001	TP101_0.0-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	103	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	109	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1941965)							
ES1826547-001	TP101_0.0-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	75.7	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1937046)							
ES1827553-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	100.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1937045)							
ES1827553-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	85.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	73.9	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	107	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	107	70	130
		EP068: Endrin	72-20-8	2 mg/kg	93.4	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1937041)							
ES1826547-001	TP101_0.0-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	105	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1936161)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1936161) - continued							
ES1826044-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	75.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1937040)							
ES1826547-001	TP101_0.0-0.2	EP071: C10 - C14 Fraction	----	523 mg/kg	115	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	127	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	129	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1936161)							
ES1826044-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	74.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1937040)							
ES1826547-001	TP101_0.0-0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	119	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	124	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	118	52	132
EP080: BTEXN (QCLot: 1936161)							
ES1826044-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	77.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	78.7	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.2	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	79.9	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	84.7	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	81.2	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1826547**	Page	: 1 of 7
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS ALISON MONKLEY	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 07-Sep-2018
Site	:	Issue Date	: 22-Sep-2018
Sampler	: JULIAN FOWLER	No. of samples received	: 28
Order number	:	No. of samples analysed	: 11

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved							
TP101_0.0-0.2,	TP101_0.5-0.6,	19-Sep-2018	13-Sep-2018	**6**	----	----	----
TP105_0.0-0.2,	TP105_0.6-0.7						

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA002: pH 1:5 (Soils)								
Soil Glass Jar - Unpreserved (EA002)								
TP101_0.0-0.2,	TP101_0.5-0.6,	**06-Sep-2018**	**19-Sep-2018**	13-Sep-2018	×	**19-Sep-2018**	19-Sep-2018	✓
TP105_0.0-0.2,	TP105_0.6-0.7							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**----**	----	----	**18-Sep-2018**	20-Sep-2018	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								
Soil Glass Jar - Unpreserved (EA055)								
COMP 4,	COMP 5	**18-Sep-2018**	**----**	----	----	**18-Sep-2018**	02-Oct-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)								
TP106_0.0-0.2		**06-Sep-2018**	**----**	----	----	**19-Sep-2018**	05-Mar-2019	✓
ED007: Exchangeable Cations								
Soil Glass Jar - Unpreserved (ED007)								
TP101_0.0-0.2,	TP101_0.5-0.6,	**06-Sep-2018**	**20-Sep-2018**	04-Oct-2018	✓	**20-Sep-2018**	04-Oct-2018	✓
TP105_0.0-0.2,	TP105_0.6-0.7							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**20-Sep-2018**	05-Mar-2019	✓	**20-Sep-2018**	05-Mar-2019	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**20-Sep-2018**	04-Oct-2018	✓	**21-Sep-2018**	04-Oct-2018	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
COMP 4,	COMP 5	**18-Sep-2018**	**18-Sep-2018**	02-Oct-2018	✓	**19-Sep-2018**	28-Oct-2018	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
COMP 4,	COMP 5	**18-Sep-2018**	**18-Sep-2018**	02-Oct-2018	✓	**19-Sep-2018**	28-Oct-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**19-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	29-Oct-2018	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**18-Sep-2018**	20-Sep-2018	✓	**19-Sep-2018**	20-Sep-2018	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								
Soil Glass Jar - Unpreserved (EP071)								
TP101_0.0-0.2,	TP102_0.0-0.2,	**06-Sep-2018**	**19-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	29-Oct-2018	✓
TP103_0.0-0.2,	TP104_0.0-0.2,							
TP105_0.0-0.2,	TP106_0.0-0.2,							
FD20								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) TP101_0.0-0.2, TP102_0.0-0.2, TP103_0.0-0.2, TP104_0.0-0.2, TP105_0.0-0.2, TP106_0.0-0.2, FD20	**06-Sep-2018**	**18-Sep-2018**	20-Sep-2018	✓	**19-Sep-2018**	20-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071) TP101_0.0-0.2, TP102_0.0-0.2, TP103_0.0-0.2, TP104_0.0-0.2, TP105_0.0-0.2, TP106_0.0-0.2, FD20	**06-Sep-2018**	**19-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	29-Oct-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TP101_0.0-0.2, TP102_0.0-0.2, TP103_0.0-0.2, TP104_0.0-0.2, TP105_0.0-0.2, TP106_0.0-0.2, FD20	**06-Sep-2018**	**18-Sep-2018**	20-Sep-2018	✓	**19-Sep-2018**	20-Sep-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Exchangeable Cations	ED007	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Exchangeable Cations	ED007	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Exchangeable Cations	ED007	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Higginson (1992) method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Compositing	* EN020	SOIL	Equal weights of each original soil are taken, then mixed and homogenised. The combined mixture is labelled as a new sample.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Newcastle		☐ Non Standard or urgent TAT (List due date):	Cooling: Ice / Ice Bricks / Blue Ice / Dry Ice / None
PROJECT: 2219573	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Seal Intact? Yes / No / N/A
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 2 °C
PROJECT MANAGER: Alison Monkley	CONTACT PH: 49799999	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Julian Fowler	SAMPLER MOBILE: 0466049181		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): Esdat		
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car			
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler			MC
DATE/TIME: 7/9/18 1620	DATE/TIME: 7/9/18 4:17pm	DATE/TIME:	DATE/TIME: 7/9/18 7:50pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP101	6/9/18	S	Jar, B	2		Please hold
2	TP101				2		
3	TP101				2		
4	TP102				2		
5	TP102				2		
6	TP102			Jar	1		
7	TP103			Jar, B	2		
8	TP103				2		
9	TP103			Jar	1		
10	TP103			Jar	1		
11	TP104			Jar, B	2		
12	TP104			Jar, B	2		
13	TP104			Jar	1		
14	TP105			Jar, B	2		
15	TP105				2		
16	TP105				2		
17	TP105			Jar	1		
18	TP106			Jar, B	2		
				TOTAL			

LAB OF ORIGIN: NEWCASTLE

E-MAILED

Environmental Division Sydney
Work Order Reference
ES1826547

Telephone : + 61-2-8784 8555

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

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph. 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD

OFFICE: Newcastle

PROJECT: 2219573

ORDER NUMBER:

PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999

SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181

COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat

Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car

Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

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

☑ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 (2) 3 4 5 6 7

OF: 1 (2) 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact: Yes No N/A

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

Random Sample Temperature on Receipt: Yes No

Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler			ML
DATE/TIME: 7/9/18 1620	DATE/TIME:	DATE/TIME:	DATE/TIME: 7/9/18 7:30pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
19	TP106	6/9/18	S	Jar, B	2									Please hold
20	TP106	↓	↓	Jar, B	2									
21	TP106	↓	↓	Jar	1									
22	FD20	↓	↓	Jar	1									
23	FD21	↓	↓	Jar	1									
24	FD22	↓	↓	Jar	1									
25	TP106 - 0.75 - 0.8			Extra										
26	TP106 - 1.2 - 1.25													
				TOTAL										

E-MAILED

LAB OF ORIGIN: NEWCASTLE

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

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Office)
Cooling Method: ICE
Free ice / frozen gel packs
Cooling Initiated
Temperature on receipt: 2 °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler			MK
DATE/TIME: 7/9/18 1620	DATE/TIME: 7/9/18 4.17pm	DATE/TIME:	DATE/TIME: 7/9/18 7:50pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). — Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS								Additional Information
1	TP101 -0.0-0.2	6/9/18	S	Jar, B	2								Please hold
2	TP101 -0.2-0.3				2								
3	TP101 -0.5-0.6				2								
4	TP102 -0.0-0.2				2								
5	TP102 -0.2-0.3				2								
6	TP102 -0.5-0.6			Jar	1								
7	TP103 -0.0-0.2			Jar, B	2								
8	TP103 -0.2-0.3				2								
9	TP103 -0.5-0.6			Jar	1								
10	TP103 -1.0-1.1			Jar	1								
11	TP104 -0.0-0.2			Jar, B	2								
12	TP104 -0.2-0.3			Jar, B	2								
13	TP104 -0.55-0.6			Jar	1								
14	TP105 -0.0-0.2			Jar, B	2								
15	TP105 -0.2-0.3				2								
16	TP105 -0.6-0.7				2								
17	TP105 -1.0-1.1			Jar	1								
18	TP106 -0.0-0.2			Jar, B	2								
				TOTAL									

LAB OF ORIGIN: NEWCASTLE

E-MAILED

Environmental Division Sydney
Work Order Reference
ES1826547

Telephone : +61-2-8784 8555

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Newcastle		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: 2219573	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present on arrival? Yes No
ORDER NUMBER:		COC: 1 (2) 3 4 5 6 7	Random Sample Temperature on Receipt
PROJECT MANAGER: Alison Monkley	CONTACT PH: 49799999	OF: 1 (2) 3 4 5 6 7	Other Comments:

SAMPLER: Julian Fowler	SAMPLER MOBILE: 0466049181	RELINQUISHED BY: Julian Fowler	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: ML
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): Esdat	DATE/TIME: 7/9/18 1620	DATE/TIME:	DATE/TIME:	DATE/TIME: 7/9/18 7:30pm
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, ntl.car					
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
19	TP106 0.2_0.5	6/9/18	S	Jar, B	2								Please hold
20	TP106_0.5_0.6	↓	↓	Jar, B	2								
21	TP106_0.6_0.7			Jar	1								
22	FD20			Jar	1								
23	FD21			Jar	1								
24	FD22			Jar	1								
25	TP106_0.75_0.8			Extra									
26	TP106_1.2_1.25												
				TOTAL									

E-MAIL

LAB OF ORIGIN: NEWCASTLE

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

updated COC's 17/9/18 17:00

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burns Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Commondale Drive Gawson QLD 4680 Ph: 07 4971 5670 E: gladstone@alsglobal.com
MACKAY 79 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0300 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: 2219573
ORDER NUMBER:
PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999
SAMPLER: Julian Fowler — SAMPLER MOBILE: 0466049181
COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat
Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, nil.car
Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Quality Cooling Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 2 - 5 °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler			
DATE/TIME: 7/9/18 1620	DATE/TIME: 7/9/18 4:17pm	DATE/TIME:	DATE/TIME:

ALS USE — SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) — CONTAINER INFORMATION — ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price). Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Asbestos / Newcastle

LAB ID	SAMPLE ID	DATE SAMPLED	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TRH, BTEXN	PAH, 8 metals	Asbestos	Phenols/phenol	Comp 4	Comp 5 (OCP + PCB)	Comp 5 (OCP + PCB)	pH, CEC			Additional Information
1	TP101_0.0-0.2	5/9/18	S	Jar, B	2	X				X			X			Please hold
2	TP101_0.2-0.3				2											
3	TP101_0.5-0.6				2											
4	TP102_0.0-0.2				2	X				[redacted]	X		X			
5	TP102_0.2-0.3				2											
6	TP102_0.5-0.6				1											
7	TP103_0.0-0.2			Jar, B	2	X				X						
8	TP103_0.2-0.3				2											
9	TP103_0.5-0.6			Jar	1						X					
10	TP103_1.0-1.1			Jar	1											
11	TP104_0.0-0.2			Jar, B	2	X										
12	TP104_0.2-0.3			Jar, B	2											
13	TP104_0.55-0.6			Jar	1											
14	TP105_0.0-0.2			Jar, B	2	X				X			X			
15	TP105_0.2-0.3				2						[redacted]					
16	TP105_0.6-0.7				2						X		X			
17	TP105_1.0-1.1			Jar	1											
18	TP106_0.0-0.2			Jar, B	2	X	X			X						
				TOTAL												

Lab / Analysis:
Organised By: Date:
Relinquished By: Date:
Consignee: Courier:
WO No:
Attach By PC: Internal Sheet

Split WO

Environmental Division Sydney
Work Order Reference
ES1826547
Telephone : + 61-2-8784 8555

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

21/9 Updated COC'S

17/9/18 17:00 P T

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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

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

MELBOURNE: 4 Caterpillar Drive Clayton QLD 3168 Ph: 03 9541 9699 E: samples.melbourne@alsglobal.com

MACKAY: 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

PERTH: UNIT 3, 4 Walpol Road Bayswater WA 6053 Ph: 08 9543 0900 E: samples.perth@alsglobal.com

SINGAPORE: 22 Serangoon Road Singapore 217993 Ph: 65 6271 1938 E: singapore.mail@alsglobal.com

NEWCASTLE: 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

DARWIN: 2/13 Gardy Place North Ngoya NSW 2541 Ph: 07 4352 2063 E: samples.darwin@alsglobal.com

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

SYDNEY: 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE: U 15 Dennis Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG: 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD

OFFICE: Newcastle

PROJECT: 2219573

ORDER NUMBER:

PROJECT MANAGER: Alison Monkley — CONTACT PH: 49799999

SAMPLER: Julian Fowler — SAMPLER MOBILE: 0465049181

COC emailed to ALS? (YES / NO) — EDD FORMAT (or default): Esdat

Email Reports to (will default to PM if no other addresses are listed): Alison, ghdlab reports, nil car

Email Invoice to (will default to PM if no other addresses are listed): ap-fss@ghd.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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

☑ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 (2) 3 4 5 6 7

OF: 1 (2) 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Julian Fowler			
DATE/TIME: 7/9/18 1620	DATE/TIME:	DATE/TIME:	DATE/TIME:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TRH, BTEXN PAH, 8 metals	Asbestos Presence/absence		(Comp 4 (Lab to PCB)	" (Comp 5 (Lab to PCB)	pH, CEC		
19	TP106_0.2-0.3	6/9/18	S	Jar, B	2								Please hold
20	TP106_0.6-0.7	↓	↓	Jar, B	2					X			
21	TP106_0.75-0.8			Jar	1								
22	FD20			Jar	1	X							
23	FD21			Jar	1								
24	FD22			Jar	1								
20	TP106_0.5-0.6												
25	TP106_0.75-0.8												
26	TP106_1.2-1.25			Extra									
				TOTAL									

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1826738**	Page	: 1 of 4
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR BRIAN OBERDORF	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 11-Sep-2018 08:37
Order number	: 2219573	Date Analysis Commenced	: 12-Sep-2018
C-O-C number	: ----	Issue Date	: 26-Sep-2018 18:38
Sampler	: D.COOPER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP103 0.5-0.6M	TP103 1.0-1.1M	BH303 2.5-2.95M	BH304 0.5-0.95M	BH302 4.0-4.45M
			Client sampling date / time	06-Sep-2018 00:00	06-Sep-2018 00:00	03-Sep-2018 00:00	03-Sep-2018 00:00	30-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1826738-001	ES1826738-002	ES1826738-003	ES1826738-004	ES1826738-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.5	5.7	6.2	5.6	5.6
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	41	106	116	24	60
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	28.4	14.6	18.8	7.8	32.6
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	460	130	60	10	80
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	30	20	320	20	130

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BHA302 1.0-1.45M	BH201 4.0-4.45M	----	----	----
			Client sampling date / time	30-Aug-2018 00:00	03-Sep-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1826738-006	ES1826738-008	--------	--------	--------
				Result	Result	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	4.5	5.8	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	84	21	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	18.1	18.7	----	----	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	100	20	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	40	20	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1826738**	Page	: 1 of 3
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR BRIAN OBERDORF	Contact	: Brenda Hong
Address	: PO BOX 5403 NEWCASTLE WEST NSW, AUSTRALIA 2302	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 11-Sep-2018
Order number	: 2219573	Date Analysis Commenced	: 12-Sep-2018
C-O-C number	: ----	Issue Date	: 26-Sep-2018
Sampler	: D.COOPER		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA002: pH 1:5 (Soils) (QC Lot: 1926568)									
ES1826782-003	Anonymous	EA002: pH Value	----	0.1	pH Unit	6.3	6.3	0.00	0% - 20%
ES1826738-001	TP103 0.5-0.6M	EA002: pH Value	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 1926570)									
ES1826782-003	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	50	53	6.41	0% - 20%
ES1826738-001	TP103 0.5-0.6M	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	41	40	4.44	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1927153)									
ES1826724-024	Anonymous	EA055: Moisture Content	----	0.1	%	4.7	5.1	8.58	No Limit
ES1826738-008	BH201 4.0-4.45M	EA055: Moisture Content	----	0.1	%	18.7	18.6	0.00	0% - 20%
ED040S: Soluble Major Anions (QC Lot: 1926569)									
ES1826782-003	Anonymous	ED040S: Sulfate as SO4 2-	14808-79-8	10	mg/kg	20	30	0.00	No Limit
ES1826738-001	TP103 0.5-0.6M	ED040S: Sulfate as SO4 2-	14808-79-8	10	mg/kg	460	500	9.28	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 1926571)									
ES1826807-003	Anonymous	ED045G: Chloride	16887-00-6	10	mg/kg	620	620	0.00	0% - 20%
ES1826738-001	TP103 0.5-0.6M	ED045G: Chloride	16887-00-6	10	mg/kg	30	40	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA010: Conductivity (1:5) (QCLot: 1926570)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	96.4	92	108
ED040S: Soluble Major Anions (QCLot: 1926569)								
ED040S: Sulfate as SO4 2-	14808-79-8	10	mg/kg	<10	150 mg/kg	98.5	80	120
ED045G: Chloride by Discrete Analyser (QCLot: 1926571)								
ED045G: Chloride	16887-00-6	10	mg/kg	<10	50 mg/kg	110	75	125
				<10	5000 mg/kg	101	79	117

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 1926571)							
ES1826738-001	TP103 0.5-0.6M	ED045G: Chloride	16887-00-6	1250 mg/kg	118	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1826738**	Page	: 1 of 5
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR BRIAN OBERDORF	Telephone	: (02) 8784 8504
Project	: 2219573	Date Samples Received	: 11-Sep-2018
Site	:	Issue Date	: 26-Sep-2018
Sampler	: D.COOPER	No. of samples received	: 7
Order number	: 2219573	No. of samples analysed	: 7

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA002: pH 1:5 (Soils)							
Snap Lock Bag BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	12-Sep-2018	10-Sep-2018	**2**	----	----	----
Snap Lock Bag BH302 4.0-4.45M,	BHA302 1.0-1.45M	12-Sep-2018	06-Sep-2018	**6**	----	----	----
EA010: Conductivity (1:5)							
Snap Lock Bag BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	12-Sep-2018	10-Sep-2018	**2**	----	----	----
Snap Lock Bag BH302 4.0-4.45M,	BHA302 1.0-1.45M	12-Sep-2018	06-Sep-2018	**6**	----	----	----

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA002: pH 1:5 (Soils)								
Snap Lock Bag (EA002) BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	**03-Sep-2018**	**12-Sep-2018**	10-Sep-2018	×	**12-Sep-2018**	12-Sep-2018	✓
Snap Lock Bag (EA002) TP103 0.5-0.6M,	TP103 1.0-1.1M	**06-Sep-2018**	**12-Sep-2018**	13-Sep-2018	✓	**12-Sep-2018**	12-Sep-2018	✓
Snap Lock Bag (EA002) BH302 4.0-4.45M,	BHA302 1.0-1.45M	**30-Aug-2018**	**12-Sep-2018**	06-Sep-2018	×	**12-Sep-2018**	12-Sep-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity (1:5)								
Snap Lock Bag (EA010) BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	**03-Sep-2018**	**12-Sep-2018**	10-Sep-2018	×	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (EA010) TP103 0.5-0.6M,	TP103 1.0-1.1M	**06-Sep-2018**	**12-Sep-2018**	13-Sep-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (EA010) BH302 4.0-4.45M,	BHA302 1.0-1.45M	**30-Aug-2018**	**12-Sep-2018**	06-Sep-2018	×	**12-Sep-2018**	10-Oct-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Snap Lock Bag (EA055) BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	**03-Sep-2018**	**----**	----	----	**12-Sep-2018**	17-Sep-2018	✓
Snap Lock Bag (EA055) TP103 0.5-0.6M,	TP103 1.0-1.1M	**06-Sep-2018**	**----**	----	----	**12-Sep-2018**	20-Sep-2018	✓
Snap Lock Bag (EA055) BH302 4.0-4.45M,	BHA302 1.0-1.45M	**30-Aug-2018**	**----**	----	----	**12-Sep-2018**	13-Sep-2018	✓
ED040S : Soluble Sulfate by ICPAES								
Snap Lock Bag (ED040S) BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	**03-Sep-2018**	**12-Sep-2018**	01-Oct-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (ED040S) TP103 0.5-0.6M,	TP103 1.0-1.1M	**06-Sep-2018**	**12-Sep-2018**	04-Oct-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (ED040S) BH302 4.0-4.45M,	BHA302 1.0-1.45M	**30-Aug-2018**	**12-Sep-2018**	27-Sep-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
ED045G: Chloride by Discrete Analyser								
Snap Lock Bag (ED045G) BH303 2.5-2.95M, BH201 4.0-4.45M	BH304 0.5-0.95M,	**03-Sep-2018**	**12-Sep-2018**	01-Oct-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (ED045G) TP103 0.5-0.6M,	TP103 1.0-1.1M	**06-Sep-2018**	**12-Sep-2018**	04-Oct-2018	✓	**12-Sep-2018**	10-Oct-2018	✓
Snap Lock Bag (ED045G) BH302 4.0-4.45M,	BHA302 1.0-1.45M	**30-Aug-2018**	**12-Sep-2018**	27-Sep-2018	✓	**12-Sep-2018**	10-Oct-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Chloride Soluble By Discrete Analyser	ED045G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chloride Soluble By Discrete Analyser	ED045G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride Soluble By Discrete Analyser	ED045G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride Soluble By Discrete Analyser	ED045G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3)
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Major Anions - Soluble	ED040S	SOIL	In house: Soluble Anions are determined off a 1:5 soil / water extract by ICPAES.
Chloride Soluble By Discrete Analyser	ED045G	SOIL	In house: Referenced to APHA 4500-Cl- E. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm. Analysis is performed on a 1:5 soil / water leachate.

Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: Belmont Temporary Desalination Plant
ORDER NUMBER: 2219573
PROJECT MANAGER: Brian Oberdorf
SAMPLER: D. Cooper
COC emailed to ALS? (YES / NO)
Email Reports to demetrius.cooper@ghd.com
Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:
CONTACT PH:
SAMPLER MOBILE:0402 375 525
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? YES No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Demetrius Cooper			
DATE/TIME: 11/09/18	DATE/TIME: 11/9/18 8-36am	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Aggressivity Suite (EC, PH, Sulphur, Cl								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	TP103, 0.5 - 0.6m,	6/09/2018	S	B	1	x								
	TP103, 1.0 - 1.1 m	6/09/2018	S	B	1	x								
	BH303, [redacted] 2.5-2.95m	3/09/2018	S	B	1	x								
	BH304, 0.5 - 0.95m	3/09/2018	S	B	1	x								
	BH302, 4.0 - 4.45 m, [redacted]	30/08/2018	S	B	1	x								
	BHA302, 1.0-1.45 m	30/08/2018	S	B	1	x								
	BH202, 2.5 - 2.95 m	3/09/2018	S	B	1	x								
	BH201, 4.0 - 4.45 m	3/09/2018	S	B	1	x								
				TOTAL	8	8								

Environmental Division Sydney
Work Order Reference
ES1826738
Telephone : +61-2-8784 8555

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD
OFFICE: Newcastle
PROJECT: Belmont Temporary Desalination Plant
ORDER NUMBER: 2219573
PROJECT MANAGER: Brian Oberdorf
SAMPLER: D. Cooper
COC emailed to ALS? (YES / NO)
Email Reports to demetrius.cooper@ghd.com
Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:
CONTACT PH:
SAMPLER MOBILE:0402 375 525
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt C
Other comment: 13.0

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Demetrius Cooper			MC
DATE/TIME: 11/09/18	DATE/TIME: 11/9/18 8-36am	DATE/TIME:	DATE/TIME: 11/9/18

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | CONTAINER INFORMATION | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Aggressivity Suite (EC, PH, Sulphur, Cl							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP103, 0.5 - 0.6m,	6/09/2018	S	B	1	x							
2	TP103, 1.0 - 1.1 m	6/09/2018	S	B	1	x							
3	BH303, [redacted] 2.5-2.95m	3/09/2018	S	B	1	x							
4	BH304, 0.5 - 0.95m	3/09/2018	S	B	1	x							
5	BH302, 4.0 - 4.45 m, [redacted]	30/08/2018	S	B	1	x							
6	BHA302, 1.0-1.45 m	30/08/2018	S	B	1	x							
7	BH202, 2.5 - 2.95 m -SNR P.T 11/9/18	3/09/2018	S	B	1	x							
8	BH201, 4.0 - 4.45 m	3/09/2018	s	B	1	x							
				TOTAL	8	8							

E-MAILED

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney
Work Order Reference
ES1826738
Telephone : +61-2-8784 8555

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

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page ____ of ____

Company Name :	GHD	Contact Name:	Joanna Sylvester	Purchase Order :	12520831
Office Address :	24 Honeysuckle Drive	Project Manager :	Joanna Sylvester	PROJECT Number :	12520831
	Newcastle 2300	Email for results :	Andrew Brailin / Joanna Sylvester	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID : 141113GHDN
Data output format:

Special Directions & Comments :
Please analyse the following as composite sample for Suite B13:

COMP 1 - TP205_0.0-0.1 , TP204_0.0-0.1 and TP203_0.0-0.1

COMP 2 - TP206_0.0-0.1, TP207_0.0-0.1 and TP208_0.0-0.1

COMP 3 - HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3

COMP 4 - TP204_0.5-0.6, TP205_0.5-0.6 and TP203_0.5-0.6

Analytes

	Sample ID	Date	Matrix	Suite B1 (TRH/BTEXN)	Heavy metals (As, Cd, Cr,Cu, Ni, Pb, Zn, Hg	Asbestos	PAHs	Suite B13 (OCPs / PCBS) - Comp
1	HA201_0.0-0.1	10/06/2020	S	X	X	X	X	
2	FD03	10/06/2020	S					
3	HA201_0.2-0.3	10/06/2020	S	X	X		X	
4	TP202_0.0-0.1	10/06/2020	S	X	X	X	X	
5	TP202_0.2_0.3	10/06/2020	S	X	X		X	
6	TP202_0.5-0.6	10/06/2020	S					
7	TP202_1.0-1.1	10/06/2020	S					
8	TP203_0.0-0.1	10/06/2020	S	X	X	X	X	
9	TP203_0.2-0.3	10/06/2020	S	X	X		X	
10	FD02	10/06/2020	S					
11	TP203_0.5-0.6	10/06/2020	S					
12	TP203_1.0-1.1	10/06/2020	S					
13	TP204_0.0-0.1	10/06/2020	S	X	X	X	X	
14	TP204_0.2-0.3	10/06/2020	S	X	X		X	
15	TP204_0.5-0.6	10/06/2020	S					
16	TP204_1.0-1.1	10/06/2020	S					
17	TP204_1.5-1.6	10/06/2020	S					
18	TP205_0.0-0.1	10/06/2020	S	X	X	X	X	
19	TP205_1.0-1.1	10/06/2020	S					

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:

1000P	500P	250P	60P	1000A	500A	125A	40Vial	Sample comments:

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Andrew Brailin	Received By: Elvis	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	20.2
Date & Time:: 43997	Date & Time: 15/6/20 11:49AM	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature:	Signature:		☐ Postal	725536
			Courier Consignment # :	

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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

Page ____ of ____

Company Name :	GHD	Contact Name:	Joanna Sylvester	Purchase Order :	12520831
Office Address :	24 Honeysuckle Drive	Project Manager :	Joanna Sylvester	PROJECT Number :	12520831
	Newcastle 2300	Email for results :	Andrew Breslin / Joanna Sylvester	PROJECT Name :	

COC Number :

Eurofins | mgt quote ID : 141113GHDN

Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B1 (TRH/BTEXN)	Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	Asbestos	PAHs	Suite 13B (OCPS/PCBs)	Hold	PFAS	Sample comments:
1	TP205_0.5-0.6	10/06/2020	S	X	X	X	X				
2	FD01	10/06/2020	S	X	X		X				
3	TP205_1.5-1.6	10/06/2020	S								
4	TP206_0.0-0.1	10/06/2020	S	X	X	X	X				
5	TP206_0.2-0.3	10/06/2020	S								
6	TP206_0.5-0.6	10/06/2020	S	X	X		X				
7	TP206_1.0-1.1	10/06/2020	S								
8	TP206_1.5-1.6	10/06/2020	S								
9	TP207_0.0-0.1	10/06/2020	S	X	X	X	X				
10	TP207_0.2-0.3	10/06/2020	S	X	X		X			X	PFAS sample
11	FD04	10/06/2020	S								PFAS sample
12	TP208_0.0-0.1	10/06/2020	S	X	X	X	X				
13	FD05	10/06/2020	S	X	X		X				
14	TP208_0.2-0.3	10/06/2020	S	X	X		X				PFAS sample
15	TP208_0.5-0.6	10/06/2020	S								
16	TP208_1.0-1.1	10/06/2020	S								
17											
18											
19											

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:

1000P	500P	250P	60P	1000A	500A	125A	40Vial

	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By:	Received By: Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	20.2°C
Date & Time::	Date & Time: 15/6/20 11:49AM	5 DAY ☐ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature:	Signature:		☐ Postal	725536
			Courier Consignment # :	

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd NEWCASTLE**
Contact name:	Andrew Brajlih
Project ID:	12520831
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 15, 2020 11:49 AM
Eurofins reference:	**725536**

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 : 20.2 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.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Andrew Brajlih - Andrew.Brajlih@ghd.com.

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

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NSW 2300

Project Name:
Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	HA201_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23439	X		X	X		X	X	
2	HA201_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23440			X	X		X	X	
3	TP202_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23441	X		X	X		X	X	
4	TP202_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23442			X	X		X	X	
5	TP203_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23443	X		X	X		X	X	
6	TP203_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23444			X	X		X	X	
7	TP204_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23445	X		X	X		X	X	
8	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23446			X	X		X	X	
9	TP205_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23447	X		X	X		X	X	
10	TP205_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23448	X		X	X		X	X	

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Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
11	FD01	Jun 10, 2020		Soil	S20-Jn23449			X	X		X	X	
12	TP206_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23450	X		X	X		X	X	
13	TP206_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23451			X	X		X	X	
14	TP207_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23452	X		X	X		X	X	
15	TP207_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23453			X	X		X	X	X
16	TP208_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23454	X		X	X		X	X	
17	FD05	Jun 10, 2020		Soil	S20-Jn23455			X	X		X	X	
18	TP208_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23456			X	X		X	X	
19	COMP 1	Jun 10, 2020		Soil	S20-Jn23457					X	X		
20	COMP 2	Jun 10, 2020		Soil	S20-Jn23458					X	X		
21	COMP 3	Jun 10, 2020		Soil	S20-Jn23459					X	X		
22	COMP 4	Jun 10, 2020		Soil	S20-Jn23460					X	X		
23	FD03	Jun 10, 2020		Soil	S20-Jn23461		X						

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Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
24	TP202_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23462		X						
25	TP202_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23463		X						
26	FD02	Jun 10, 2020		Soil	S20-Jn23464		X						
27	TP203_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23465		X						
28	TP203_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23466		X						
29	TP204_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23467		X						
30	TP204_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23468		X						
31	TP204_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23469		X						
32	TP205_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23470		X						
33	TP205_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23471		X						
34	TP206_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23472		X						
35	TP206_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23473		X						
36	TP206_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23474		X						

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Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
37	FD04	Jun 10, 2020		Soil	S20-Jn23475		X						
38	TP208_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23476		X						
39	TP208_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23477		X						
Test Counts						9	17	18	18	4	22	18	1

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Andrew Brajlih
Report	725536-AID
Project Name	
Project ID	12520831
Received Date	Jun 15, 2020
Date Reported	Jun 22, 2020

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.*

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.

Project Name
Project ID 12520831
Date Sampled Jun 10, 2020
Report 725536-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
HA201_0.0-0.1	20-Jn23439	Jun 10, 2020	Approximate Sample 49g Sample consisted of: Grey fine grain sand and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP202_0.0-0.1	20-Jn23441	Jun 10, 2020	Approximate Sample 50g Sample consisted of: Brown fine-grained soil, grey fine grain sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP203_0.0-0.1	20-Jn23443	Jun 10, 2020	Approximate Sample 48g Sample consisted of: Brown coarse-grained soil, grey fine grain sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP204_0.0-0.1	20-Jn23445	Jun 10, 2020	Approximate Sample 43g Sample consisted of: Brown coarse-grained soil, grey fine grain sand, rocks and organic debris	Chrysotile asbestos detected in the form of loose fibre bundles. Approximate dimensions of fibre bundle = 0.5x<0.5x<0.5mm. Organic fibre detected. No trace asbestos detected.
TP205_0.0-0.1	20-Jn23447	Jun 10, 2020	Approximate Sample 54g Sample consisted of: Brown coarse-grained soil and rocks and cement fragments	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP205_0.5-0.6	20-Jn23448	Jun 10, 2020	Approximate Sample 68g Sample consisted of: Brown coarse-grained soil and rocks, cement fragments and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP206_0.0-0.1	20-Jn23450	Jun 10, 2020	Approximate Sample 53g Sample consisted of: Grey fine-grained sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP207_0.0-0.1	20-Jn23452	Jun 10, 2020	Approximate Sample 71g Sample consisted of: Grey fine-grained sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP208_0.0-0.1	20-Jn23454	Jun 10, 2020	Approximate Sample 100g Sample consisted of: Yellow fine-grained sand and organic dbris	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	Jun 15, 2020	Indefinite

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Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	HA201_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23439	X		X	X		X	X	
2	HA201_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23440			X	X		X	X	
3	TP202_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23441	X		X	X		X	X	
4	TP202_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23442			X	X		X	X	
5	TP203_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23443	X		X	X		X	X	
6	TP203_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23444			X	X		X	X	
7	TP204_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23445	X		X	X		X	X	
8	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23446			X	X		X	X	
9	TP205_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23447	X		X	X		X	X	
10	TP205_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23448	X		X	X		X	X	

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

Project Name:
Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
11	FD01	Jun 10, 2020		Soil	S20-Jn23449			X	X		X	X	
12	TP206_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23450	X		X	X		X	X	
13	TP206_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23451			X	X		X	X	
14	TP207_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23452	X		X	X		X	X	
15	TP207_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23453			X	X		X	X	X
16	TP208_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23454	X		X	X		X	X	
17	FD05	Jun 10, 2020		Soil	S20-Jn23455			X	X		X	X	
18	TP208_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23456			X	X		X	X	
19	COMP 1	Jun 10, 2020		Soil	S20-Jn23457					X	X		
20	COMP 2	Jun 10, 2020		Soil	S20-Jn23458					X	X		
21	COMP 3	Jun 10, 2020		Soil	S20-Jn23459					X	X		
22	COMP 4	Jun 10, 2020		Soil	S20-Jn23460					X	X		
23	FD03	Jun 10, 2020		Soil	S20-Jn23461		X						

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ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

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Site # 1254 & 14271

Sydney
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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
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Kewdale WA 6105
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NATA # 1261
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Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
24	TP202_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23462		X						
25	TP202_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23463		X						
26	FD02	Jun 10, 2020		Soil	S20-Jn23464		X						
27	TP203_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23465		X						
28	TP203_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23466		X						
29	TP204_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23467		X						
30	TP204_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23468		X						
31	TP204_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23469		X						
32	TP205_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23470		X						
33	TP205_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23471		X						
34	TP206_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23472		X						
35	TP206_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23473		X						
36	TP206_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23474		X						

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ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

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Received: Jun 15, 2020 11:49 AM
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Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
37	FD04	Jun 10, 2020		Soil	S20-Jn23475		X						
38	TP208_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23476		X						
39	TP208_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23477		X						
Test Counts						9	17	18	18	4	22	18	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.

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Certificate of Analysis

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Andrew Brajlih**

Report **725536-S-V2**
Project name
Project ID 12520831
Received Date Jun 15, 2020

Client Sample ID			**HA201_0.0-0.1**	**HA201_0.2-0.3**	**TP202_0.0-0.1**	**TP202_0.2-0.3**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Jn23439**	**S20-Jn23440**	**S20-Jn23441**	**S20-Jn23442**
Date Sampled			**Jun 10, 2020**	**Jun 10, 2020**	**Jun 10, 2020**	**Jun 10, 2020**
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	33	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	480	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	780	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	1293	< 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	0.2	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	87	99	73
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	1100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	650	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	1750	< 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			HA201_0.0-0.1	HA201_0.2-0.3	TP202_0.0-0.1	TP202_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23439	S20-Jn23440	S20-Jn23441	S20-Jn23442
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	< 0.5	< 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	%	97	85	98	123
p-Terphenyl-d14 (surr.)	1	%	107	99	108	135
Heavy Metals						
Arsenic	2	mg/kg	2.5	2.8	4.0	2.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	5.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	27	< 5
Copper	5	mg/kg	< 5	< 5	450	8.6
Lead	5	mg/kg	5.8	< 5	130	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	2.0	< 0.1
Nickel	5	mg/kg	< 5	< 5	15	< 5
Zinc	5	mg/kg	17	< 5	730	8.2
% Moisture	1	%	9.4	< 1	18	1.8

Client Sample ID			TP203_0.0-0.1	TP203_0.2-0.3	TP204_0.0-0.1	TP204_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23443	S20-Jn23444	S20-Jn23445	S20-Jn23446
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	22	< 20	42	< 20
TRH C15-C28	50	mg/kg	460	< 50	470	< 50
TRH C29-C36	50	mg/kg	510	< 50	730	< 50
TRH C10-C36 (Total)	50	mg/kg	992	< 50	1242	< 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	%	90	51	55	101
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	51	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	51	< 50
TRH >C16-C34	100	mg/kg	880	< 100	1000	< 100

Client Sample ID			TP203_0.0-0.1	TP203_0.2-0.3	TP204_0.0-0.1	TP204_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23443	S20-Jn23444	S20-Jn23445	S20-Jn23446
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	380	< 100	620	< 100
TRH >C10-C40 (total)*	100	mg/kg	1260	< 100	1671	< 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	%	96	105	79	110
p-Terphenyl-d14 (surr.)	1	%	121	121	88	124
Heavy Metals						
Arsenic	2	mg/kg	3.3	< 2	3.0	< 2
Cadmium	0.4	mg/kg	1.5	< 0.4	3.1	< 0.4
Chromium	5	mg/kg	11	< 5	23	< 5
Copper	5	mg/kg	230	< 5	370	< 5
Lead	5	mg/kg	60	< 5	130	< 5
Mercury	0.1	mg/kg	1.1	< 0.1	2.3	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	150	13	260	47
% Moisture	1	%	14	1.4	22	8.8

Client Sample ID			TP205_0.0-0.1	TP205_0.5-0.6	FD01	TP206_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23447	S20-Jn23448	S20-Jn23449	S20-Jn23450
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	57	< 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	57	< 50	< 50

Client Sample ID			TP205_0.0-0.1	TP205_0.5-0.6	FD01	TP206_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23447	S20-Jn23448	S20-Jn23449	S20-Jn23450
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	%	90	67	105	97
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	%	96	94	94	97
p-Terphenyl-d14 (surr.)	1	%	97	98	99	102
Heavy Metals						
Arsenic	2	mg/kg	5.2	6.8	2.8	2.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	12	< 5	< 5
Copper	5	mg/kg	10	6.9	< 5	< 5
Lead	5	mg/kg	19	14	43	< 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	170	100	56	7.4
% Moisture	1	%	5.9	9.8	10	9.0

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	%	83	69	72	90
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	%	98	101	98	92
p-Terphenyl-d14 (surr.)	1	%	102	103	100	98

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	3.3	< 2	< 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	< 5	< 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	8.4	15	< 5	< 5
% Moisture	1	%	11	1.3	11	2.5
PFASs Summations						
Sum (PFHxS + PFOS)*	0.1	ug/kg	-	-	< 1	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.1	ug/kg	-	-	< 1	-
Sum of PFASs (n=30)*	0.5	ug/kg	-	-	< 1	-
Sum of US EPA PFAS (PFOS + PFOA)*	0.1	ug/kg	-	-	< 1	-
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	-	-	< 1	-
Perfluoroalkyl sulfonamido substances- Trace						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	-	-	< 1	-
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	-	-	< 1	-
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	-	-	< 1	-
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	-	-	< 1	-
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	-	-	< 1	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	-	-	< 1	-
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	-	-	< 1	-
13C8-FOSA (surr.)	1	%	-	-	71	-
D3-N-MeFOSA (surr.)	1	%	-	-	122	-
D5-N-EtFOSA (surr.)	1	%	-	-	148	-
D7-N-MeFOSE (surr.)	1	%	-	-	100	-
D9-N-EtFOSE (surr.)	1	%	-	-	93	-
D5-N-EtFOSAA (surr.)	1	%	-	-	95	-
D3-N-MeFOSAA (surr.)	1	%	-	-	95	-
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	-	-	< 1	-
Perfluoropentanoic acid (PFPeA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorohexanoic acid (PFHxA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluoroheptanoic acid (PFHpA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorooctanoic acid (PFOA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorononanoic acid (PFNA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorodecanoic acid (PFDA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorotridecanoic acid (PFTrDA)[N15]	0.1	ug/kg	-	-	< 1	-
Perfluoroundecanoic acid (PFUnDA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorododecanoic acid (PFDoDA)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.1	ug/kg	-	-	< 1	-
13C4-PFBA (surr.)	1	%	-	-	92	-
13C5-PFPeA (surr.)	1	%	-	-	103	-
13C5-PFHxA (surr.)	1	%	-	-	111	-

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
13C4-PFHpA (surr.)	1	%	-	-	96	-
13C8-PFOA (surr.)	1	%	-	-	99	-
13C5-PFNA (surr.)	1	%	-	-	103	-
13C6-PFDA (surr.)	1	%	-	-	120	-
13C2-PFUnDA (surr.)	1	%	-	-	130	-
13C2-PFDoDA (surr.)	1	%	-	-	77	-
13C2-PFTeDA (surr.)	1	%	-	-	90	-
Perfluoroalkyl sulfonic acids (PFSAs)- Trace						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorononanesulfonic acid (PFNS)[N15]	0.1	ug/kg	-	-	< 1	-
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.1	ug/kg	-	-	< 1	-
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.1	ug/kg	-	-	< 1	-
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.1	ug/kg	-	-	< 1	-
Perfluorooctanesulfonic acid (PFOS)[N11]	0.1	ug/kg	-	-	< 1	-
Perfluorodecanesulfonic acid (PFDS)[N15]	0.1	ug/kg	-	-	< 1	-
13C3-PFBS (surr.)	1	%	-	-	99	-
18O2-PFHxS (surr.)	1	%	-	-	99	-
13C8-PFOS (surr.)	1	%	-	-	98	-
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.1	ug/kg	-	-	< 1	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	-	-	< 1	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.1	ug/kg	-	-	< 1	-
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.1	ug/kg	-	-	< 1	-
13C2-4:2 FTSA (surr.)	1	%	-	-	82	-
13C2-6:2 FTSA (surr.)	1	%	-	-	85	-
13C2-8:2 FTSA (surr.)	1	%	-	-	104	-
13C2-10:2 FTSA (surr.)	1	%	-	-	84	-

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
BTEX						
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	109	77	-	-
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	-	-
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	%	96	93	-	-
p-Terphenyl-d14 (surr.)	1	%	101	97	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	< 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	< 5	-	-
Zinc	5	mg/kg	6.0	7.3	-	-
% Moisture	1	%	7.2	11	19	6.2

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	0.2	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	-	-	< 0.05	< 0.05
b-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
d-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	-	-	0.12	< 0.05
Endosulfan I	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	-	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	-	-	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	-	-	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	0.12	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	0.32	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	-	-	118	59
Tetrachloro-m-xylene (surr.)	1	%	-	-	135	82
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	118	59
Tetrachloro-m-xylene (surr.)	1	%	-	-	135	82

Client Sample ID			COMP 3	COMP 4
Sample Matrix			Soil	Soil
Eurofins Sample No.			S20-Jn23459	S20-Jn23460
Date Sampled			Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit		
% Moisture	1	%	6.4	6.6
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	74	55
Tetrachloro-m-xylene (surr.)	1	%	93	78
Polychlorinated Biphenyls				
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	74	55
Tetrachloro-m-xylene (surr.)	1	%	93	78

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
Eurofins Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 19, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Jun 19, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Jun 15, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs) - Trace			
Perfluoroalkyl sulfonamido substances- Trace	Brisbane	Oct 22, 2020	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	Oct 22, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
Perfluoroalkyl sulfonic acids (PFSAs)- Trace	Brisbane	Oct 22, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace	Brisbane	Oct 22, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
Organochlorine Pesticides	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Jun 19, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Company Name: GHD Pty Ltd NEWCASTLE
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Project Name:
Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	HA201_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23439	X		X	X		X	X	
2	HA201_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23440			X	X		X	X	
3	TP202_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23441	X		X	X		X	X	
4	TP202_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23442			X	X		X	X	
5	TP203_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23443	X		X	X		X	X	
6	TP203_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23444			X	X		X	X	
7	TP204_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23445	X		X	X		X	X	
8	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23446			X	X		X	X	
9	TP205_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23447	X		X	X		X	X	
10	TP205_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23448	X		X	X		X	X	

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Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
11	FD01	Jun 10, 2020		Soil	S20-Jn23449			X	X		X	X	
12	TP206_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23450	X		X	X		X	X	
13	TP206_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23451			X	X		X	X	
14	TP207_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23452	X		X	X		X	X	
15	TP207_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23453			X	X		X	X	X
16	TP208_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23454	X		X	X		X	X	
17	FD05	Jun 10, 2020		Soil	S20-Jn23455			X	X		X	X	
18	TP208_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23456			X	X		X	X	
19	COMP 1	Jun 10, 2020		Soil	S20-Jn23457					X	X		
20	COMP 2	Jun 10, 2020		Soil	S20-Jn23458					X	X		
21	COMP 3	Jun 10, 2020		Soil	S20-Jn23459					X	X		
22	COMP 4	Jun 10, 2020		Soil	S20-Jn23460					X	X		
23	FD03	Jun 10, 2020		Soil	S20-Jn23461		X						

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Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
24	TP202_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23462		X						
25	TP202_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23463		X						
26	FD02	Jun 10, 2020		Soil	S20-Jn23464		X						
27	TP203_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23465		X						
28	TP203_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23466		X						
29	TP204_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23467		X						
30	TP204_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23468		X						
31	TP204_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23469		X						
32	TP205_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23470		X						
33	TP205_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23471		X						
34	TP206_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23472		X						
35	TP206_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23473		X						
36	TP206_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23474		X						

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Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
37	FD04	Jun 10, 2020		Soil	S20-Jn23475		X						
38	TP208_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23476		X						
39	TP208_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23477		X						
Test Counts						9	17	18	18	4	22	18	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	
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							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 0.5			0.5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 0.5			0.5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 0.5			0.5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 0.5			0.5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 0.5			0.5	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	ug/kg	< 0.5			0.5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 0.1			0.1	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 0.1			0.1	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 0.1			0.1	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 0.1			0.1	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 0.1			0.1	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 0.1			0.1	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 0.1			0.1	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 0.1			0.1	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 0.1			0.1	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 0.1			0.1	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 0.1			0.1	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 0.1			0.1	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 0.1			0.1	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 0.1			0.1	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 0.1			0.1	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 0.1			0.1	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 0.1			0.1	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 0.1			0.1	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 0.1			0.1	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 0.1			0.1	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 0.1			0.1	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			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	%	77			70-130	Pass	
TRH C10-C14	%	74			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	90			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
o-Xylene	%	92			70-130	Pass	
Xylenes - Total*	%	92			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	87			70-130	Pass	
TRH C6-C10	%	74			70-130	Pass	
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	98			70-130	Pass	
Acenaphthylene	%	98			70-130	Pass	
Anthracene	%	101			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	%	95			70-130	Pass	
Benzo(g.h.i)perylene	%	99			70-130	Pass	
Benzo(k)fluoranthene	%	85			70-130	Pass	
Chrysene	%	108			70-130	Pass	
Dibenz(a.h)anthracene	%	100			70-130	Pass	
Fluoranthene	%	101			70-130	Pass	
Fluorene	%	102			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	97			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	100			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	107			80-120	Pass	
Cadmium	%	106			80-120	Pass	
Chromium	%	109			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	%	109			80-120	Pass	
Lead	%	110			80-120	Pass	
Mercury	%	103			80-120	Pass	
Nickel	%	107			80-120	Pass	
Zinc	%	106			80-120	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	%	113			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	114			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	105			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	99			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	74			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	110			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	101			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	105			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	108			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	112			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	105			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	147			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	106			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	112			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	111			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Trace							
Perfluorobutanesulfonic acid (PFBS)	%	94			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	99			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	85			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	89			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	95			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	105			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	96			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	92			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	108			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	110			50-150	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	95			70-130	Pass	
4.4'-DDD	%	100			70-130	Pass	
4.4'-DDE	%	104			70-130	Pass	
4.4'-DDT	%	104			70-130	Pass	
a-BHC	%	105			70-130	Pass	
Aldrin	%	104			70-130	Pass	
b-BHC	%	101			70-130	Pass	
d-BHC	%	126			70-130	Pass	
Dieldrin	%	102			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan I			%	99			70-130	Pass	
Endosulfan II			%	100			70-130	Pass	
Endosulfan sulphate			%	103			70-130	Pass	
Endrin			%	106			70-130	Pass	
Endrin aldehyde			%	99			70-130	Pass	
Endrin ketone			%	103			70-130	Pass	
g-BHC (Lindane)			%	104			70-130	Pass	
Heptachlor			%	107			70-130	Pass	
Heptachlor epoxide			%	103			70-130	Pass	
Hexachlorobenzene			%	100			70-130	Pass	
Methoxychlor			%	105			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260			%	87			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Jn19576	NCP	%	108			70-130	Pass	
Acenaphthylene	S20-Jn19576	NCP	%	101			70-130	Pass	
Anthracene	S20-Jn19576	NCP	%	98			70-130	Pass	
Benz(a)anthracene	S20-Jn19576	NCP	%	86			70-130	Pass	
Benzo(a)pyrene	S20-Jn19576	NCP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Jn19576	NCP	%	85			70-130	Pass	
Benzo(g.h.i)perylene	S20-Jn19576	NCP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn19576	NCP	%	106			70-130	Pass	
Chrysene	S20-Jn19576	NCP	%	98			70-130	Pass	
Dibenz(a.h)anthracene	S20-Jn19576	NCP	%	72			70-130	Pass	
Fluoranthene	S20-Jn19576	NCP	%	102			70-130	Pass	
Fluorene	S20-Jn19576	NCP	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn19576	NCP	%	83			70-130	Pass	
Naphthalene	S20-Jn19576	NCP	%	100			70-130	Pass	
Phenanthrene	S20-Jn19576	NCP	%	95			70-130	Pass	
Pyrene	S20-Jn19576	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Jn22537	NCP	%	121			75-125	Pass	
Cadmium	S20-Jn22537	NCP	%	121			75-125	Pass	
Chromium	S20-Jn22222	NCP	%	103			75-125	Pass	
Copper	S20-Jn22537	NCP	%	122			75-125	Pass	
Lead	S20-Jn22222	NCP	%	101			75-125	Pass	
Mercury	S20-Jn22222	NCP	%	105			75-125	Pass	
Nickel	S20-Jn22222	NCP	%	103			75-125	Pass	
Zinc	S20-Jn22222	NCP	%	99			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Jn23442	CP	%	80			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Jn23442	CP	%	104			70-130	Pass	
Toluene	S20-Jn23442	CP	%	108			70-130	Pass	
Ethylbenzene	S20-Jn23442	CP	%	106			70-130	Pass	
m&p-Xylenes	S20-Jn23442	CP	%	106			70-130	Pass	
o-Xylene	S20-Jn23442	CP	%	106			70-130	Pass	
Xylenes - Total*	S20-Jn23442	CP	%	106			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Jn23442	CP	%	100			70-130	Pass	
TRH C6-C10	S20-Jn23442	CP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S20-Jn23444	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S20-Jn23444	CP	%	97			70-130	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	S20-Jn23453	CP	%	120			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S20-Jn23453	CP	%	108			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S20-Jn23453	CP	%	102			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S20-Jn23453	CP	%	94			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S20-Jn23453	CP	%	92			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S20-Jn23453	CP	%	106			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S20-Jn23453	CP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1					
Perfluorobutanoic acid (PFBA)	S20-Jn23453	CP	%	109			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S20-Jn23453	CP	%	107			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S20-Jn23453	CP	%	103			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluorononanoic acid (PFNA)	S20-Jn23453	CP	%	106			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S20-Jn23453	CP	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S20-Jn23453	CP	%	130			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S20-Jn23453	CP	%	112			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S20-Jn23453	CP	%	109			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S20-Jn23453	CP	%	116			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S20-Jn23453	CP	%	93			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S20-Jn23453	CP	%	95			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S20-Jn23453	CP	%	91			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S20-Jn23453	CP	%	97			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S20-Jn23453	CP	%	100			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S20-Jn23453	CP	%	107			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorodecanesulfonic acid (PFDS)	S20-Jn23453	CP	%	98			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S20-Jn23453	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S20-Jn23453	CP	%	115			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S20-Jn23453	CP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S20-Jn23453	CP	%	110			50-150	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Jn18210	NCP	%	103			70-130	Pass	
4.4'-DDD	S20-Jn18210	NCP	%	111			70-130	Pass	
4.4'-DDE	S20-Jn18210	NCP	%	113			70-130	Pass	
4.4'-DDT	S20-Jn18210	NCP	%	109			70-130	Pass	
a-BHC	S20-Jn18210	NCP	%	103			70-130	Pass	
Aldrin	S20-Jn18210	NCP	%	81			70-130	Pass	
b-BHC	S20-Jn18210	NCP	%	104			70-130	Pass	
d-BHC	S20-Jn18210	NCP	%	129			70-130	Pass	
Dieldrin	S20-Jn18210	NCP	%	112			70-130	Pass	
Endosulfan I	S20-Jn18210	NCP	%	106			70-130	Pass	
Endosulfan II	S20-Jn18210	NCP	%	108			70-130	Pass	
Endosulfan sulphate	S20-Jn18210	NCP	%	110			70-130	Pass	
Endrin	S20-Jn18210	NCP	%	115			70-130	Pass	
Endrin aldehyde	S20-Jn18210	NCP	%	95			70-130	Pass	
Endrin ketone	S20-Jn18210	NCP	%	107			70-130	Pass	
g-BHC (Lindane)	S20-Jn18210	NCP	%	106			70-130	Pass	
Heptachlor	S20-Jn18210	NCP	%	109			70-130	Pass	
Heptachlor epoxide	S20-Jn18210	NCP	%	110			70-130	Pass	
Hexachlorobenzene	S20-Jn18210	NCP	%	105			70-130	Pass	
Methoxychlor	S20-Jn18210	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S20-Jn18159	NCP	%	111			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Jn22527	NCP	mg/kg	2.7	2.4	11	30%	Pass	
Cadmium	S20-Jn22527	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Jn22527	NCP	mg/kg	11	10	6.0	30%	Pass	
Copper	S20-Jn22527	NCP	mg/kg	7.2	9.2	24	30%	Pass	
Lead	S20-Jn22527	NCP	mg/kg	15	13	14	30%	Pass	
Mercury	S20-Jn22527	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Jn22527	NCP	mg/kg	10	15	39	30%	Fail	Q15
Zinc	S20-Jn22527	NCP	mg/kg	27	28	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Jn22879	NCP	%	21	20	3.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Jn23441	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Jn23441	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Jn23441	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Jn23441	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Jn23441	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Jn23443	CP	mg/kg	22	28	26	30%	Pass	
TRH C15-C28	S20-Jn23443	CP	mg/kg	460	620	31	30%	Fail	Q15
TRH C29-C36	S20-Jn23443	CP	mg/kg	510	670	26	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Jn23443	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Jn23443	CP	mg/kg	880	1200	29	30%	Pass	
TRH >C34-C40	S20-Jn23443	CP	mg/kg	380	460	20	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Jn23453	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Jn23453	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Jn23453	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Jn26965	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-Jn26965	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S20-Jn26965	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Jn26965	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

This report has been revised (V2) to report trace level LOR for sample S20-Jn23453.

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
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).
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
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

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
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.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page ____ of ____

Company Name :	GHD	Contact Name:	Joanna Sylvester	Purchase Order :	12520831
Office Address :	24 Honeysuckle Drive	Project Manager :	Joanna Sylvester	PROJECT Number :	12520831
	Newcastle 2300	Email for results :	Andrew Brailin / Joanna Sylvester	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID : 141113GHDN
Data output format:

Special Directions & Comments :
Please analyse the following as composite sample for Suite B13:

COMP 1 - TP205_0.0-0.1 , TP204_0.0-0.1 and TP203_0.0-0.1

COMP 2 - TP206_0.0-0.1, TP207_0.0-0.1 and TP208_0.0-0.1

COMP 3 - HA201_0.2-0.3, TP202_0.2-0.3 and TP206_0.2-0.3

COMP 4 - TP204_0.5-0.6, TP205_0.5-0.6 and TP203_0.5-0.6

Analytes

	Sample ID	Date	Matrix	Suite B1 (TRH/BTEXN)	Heavy metals (As, Cd, Cr,Cu, Ni, Pb, Zn, Hg	Asbestos	PAHs	Suite B13 (OCPs / PCBS) - Comp
1	HA201_0.0-0.1	10/06/2020	S	X	X	X	X	
2	FD03	10/06/2020	S					
3	HA201_0.2-0.3	10/06/2020	S	X	X		X	
4	TP202_0.0-0.1	10/06/2020	S	X	X	X	X	
5	TP202_0.2_0.3	10/06/2020	S	X	X		X	
6	TP202_0.5-0.6	10/06/2020	S					
7	TP202_1.0-1.1	10/06/2020	S					
8	TP203_0.0-0.1	10/06/2020	S	X	X	X	X	
9	TP203_0.2-0.3	10/06/2020	S	X	X		X	
10	FD02	10/06/2020	S					
11	TP203_0.5-0.6	10/06/2020	S					
12	TP203_1.0-1.1	10/06/2020	S					
13	TP204_0.0-0.1	10/06/2020	S	X	X	X	X	
14	TP204_0.2-0.3	10/06/2020	S	X	X		X	
15	TP204_0.5-0.6	10/06/2020	S					
16	TP204_1.0-1.1	10/06/2020	S					
17	TP204_1.5-1.6	10/06/2020	S					
18	TP205_0.0-0.1	10/06/2020	S	X	X	X	X	
19	TP205_1.0-1.1	10/06/2020	S					

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:

1000P	500P	250P	60P	1000A	500A	125A	40Vial	Sample comments:

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Andrew Brailin	Received By: Elvis	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	20.2
Date & Time:: 43997	Date & Time: 15/6/20 11:49AM	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature:	Signature:		☐ Postal	725536
			Courier Consignment # :	

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page ____ of ____

Company Name :	GHD	Contact Name:	Joanna Sylvester	Purchase Order :	12520831
Office Address :	24 Honeysuckle Drive	Project Manager :	Joanna Sylvester	PROJECT Number :	12520831
	Newcastle 2300	Email for results :	Andrew Breslin / Joanna Sylvester	PROJECT Name :	

COC Number :

Eurofins | mgt quote ID : 141113GHDN

Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B1 (TRH/BTEXN)	Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	Asbestos	PAHs	Suite 13B (OCPS/PCBs)	Hold	PFAS	Sample comments:
1	TP205_0.5-0.6	10/06/2020	S	X	X	X	X				
2	FD01	10/06/2020	S	X	X		X				
3	TP205_1.5-1.6	10/06/2020	S								
4	TP206_0.0-0.1	10/06/2020	S	X	X	X	X				
5	TP206_0.2-0.3	10/06/2020	S								
6	TP206_0.5-0.6	10/06/2020	S	X	X		X				
7	TP206_1.0-1.1	10/06/2020	S								
8	TP206_1.5-1.6	10/06/2020	S								
9	TP207_0.0-0.1	10/06/2020	S	X	X	X	X				
10	TP207_0.2-0.3	10/06/2020	S	X	X		X			X	PFAS sample
11	FD04	10/06/2020	S								PFAS sample
12	TP208_0.0-0.1	10/06/2020	S	X	X	X	X				
13	FD05	10/06/2020	S	X	X		X				
14	TP208_0.2-0.3	10/06/2020	S	X	X		X				PFAS sample
15	TP208_0.5-0.6	10/06/2020	S								
16	TP208_1.0-1.1	10/06/2020	S								
17											
18											
19											

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:

1000P	500P	250P	60P	1000A	500A	125A	40Vial

	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By:	Received By: Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	20.2°C
Date & Time::	Date & Time: 15/6/20 11:49AM	5 DAY ☐ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature:	Signature:		☐ Postal	725536
			Courier Consignment # :	

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Sample Receipt Advice

Company name:	**GHD Pty Ltd NEWCASTLE**
Contact name:	Andrew Brajlih
Project ID:	12520831
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 15, 2020 11:49 AM
Eurofins reference:	**725536**

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 : 20.2 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.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Andrew Brajlih - Andrew.Brajlih@ghd.com.

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

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Andrew Brajlih
Report	725536-AID
Project Name	
Project ID	12520831
Received Date	Jun 15, 2020
Date Reported	Jun 22, 2020

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.*

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Project Name
Project ID 12520831
Date Sampled Jun 10, 2020
Report 725536-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
HA201_0.0-0.1	20-Jn23439	Jun 10, 2020	Approximate Sample 49g Sample consisted of: Grey fine grain sand and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP202_0.0-0.1	20-Jn23441	Jun 10, 2020	Approximate Sample 50g Sample consisted of: Brown fine-grained soil, grey fine grain sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP203_0.0-0.1	20-Jn23443	Jun 10, 2020	Approximate Sample 48g Sample consisted of: Brown coarse-grained soil, grey fine grain sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP204_0.0-0.1	20-Jn23445	Jun 10, 2020	Approximate Sample 43g Sample consisted of: Brown coarse-grained soil, grey fine grain sand, rocks and organic debris	Chrysotile asbestos detected in the form of loose fibre bundles. Approximate dimensions of fibre bundle = 0.5x<0.5x<0.5mm. Organic fibre detected. No trace asbestos detected.
TP205_0.0-0.1	20-Jn23447	Jun 10, 2020	Approximate Sample 54g Sample consisted of: Brown coarse-grained soil and rocks and cement fragments	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP205_0.5-0.6	20-Jn23448	Jun 10, 2020	Approximate Sample 68g Sample consisted of: Brown coarse-grained soil and rocks, cement fragments and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP206_0.0-0.1	20-Jn23450	Jun 10, 2020	Approximate Sample 53g Sample consisted of: Grey fine-grained sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP207_0.0-0.1	20-Jn23452	Jun 10, 2020	Approximate Sample 71g Sample consisted of: Grey fine-grained sand, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP208_0.0-0.1	20-Jn23454	Jun 10, 2020	Approximate Sample 100g Sample consisted of: Yellow fine-grained sand and organic dbris	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	Jun 15, 2020	Indefinite

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Company Name: GHD Pty Ltd NEWCASTLE
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Project Name:
Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	HA201_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23439	X		X	X		X	X	
2	HA201_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23440			X	X		X	X	
3	TP202_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23441	X		X	X		X	X	
4	TP202_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23442			X	X		X	X	
5	TP203_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23443	X		X	X		X	X	
6	TP203_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23444			X	X		X	X	
7	TP204_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23445	X		X	X		X	X	
8	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23446			X	X		X	X	
9	TP205_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23447	X		X	X		X	X	
10	TP205_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23448	X		X	X		X	X	

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Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
11	FD01	Jun 10, 2020		Soil	S20-Jn23449			X	X		X	X	
12	TP206_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23450	X		X	X		X	X	
13	TP206_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23451			X	X		X	X	
14	TP207_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23452	X		X	X		X	X	
15	TP207_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23453			X	X		X	X	X
16	TP208_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23454	X		X	X		X	X	
17	FD05	Jun 10, 2020		Soil	S20-Jn23455			X	X		X	X	
18	TP208_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23456			X	X		X	X	
19	COMP 1	Jun 10, 2020		Soil	S20-Jn23457					X	X		
20	COMP 2	Jun 10, 2020		Soil	S20-Jn23458					X	X		
21	COMP 3	Jun 10, 2020		Soil	S20-Jn23459					X	X		
22	COMP 4	Jun 10, 2020		Soil	S20-Jn23460					X	X		
23	FD03	Jun 10, 2020		Soil	S20-Jn23461		X						

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Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
24	TP202_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23462		X						
25	TP202_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23463		X						
26	FD02	Jun 10, 2020		Soil	S20-Jn23464		X						
27	TP203_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23465		X						
28	TP203_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23466		X						
29	TP204_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23467		X						
30	TP204_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23468		X						
31	TP204_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23469		X						
32	TP205_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23470		X						
33	TP205_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23471		X						
34	TP206_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23472		X						
35	TP206_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23473		X						
36	TP206_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23474		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	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
37	FD04	Jun 10, 2020		Soil	S20-Jn23475		X						
38	TP208_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23476		X						
39	TP208_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23477		X						
Test Counts						9	17	18	18	4	22	18	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.

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Certificate of Analysis

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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

GHD Pty Ltd
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NSW 2300

Attention: **Andrew Brajlih**

Report **725536-S**
Project name
Project ID 12520831
Received Date Jun 15, 2020

Client Sample ID			**HA201_0.0-0.1**	**HA201_0.2-0.3**	**TP202_0.0-0.1**	**TP202_0.2-0.3**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Jn23439**	**S20-Jn23440**	**S20-Jn23441**	**S20-Jn23442**
Date Sampled			**Jun 10, 2020**	**Jun 10, 2020**	**Jun 10, 2020**	**Jun 10, 2020**
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	33	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	480	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	780	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	1293	< 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	0.2	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	87	99	73
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	1100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	650	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	1750	< 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			HA201_0.0-0.1	HA201_0.2-0.3	TP202_0.0-0.1	TP202_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23439	S20-Jn23440	S20-Jn23441	S20-Jn23442
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	< 0.5	< 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	%	97	85	98	123
p-Terphenyl-d14 (surr.)	1	%	107	99	108	135
Heavy Metals						
Arsenic	2	mg/kg	2.5	2.8	4.0	2.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	5.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	27	< 5
Copper	5	mg/kg	< 5	< 5	450	8.6
Lead	5	mg/kg	5.8	< 5	130	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	2.0	< 0.1
Nickel	5	mg/kg	< 5	< 5	15	< 5
Zinc	5	mg/kg	17	< 5	730	8.2
% Moisture	1	%	9.4	< 1	18	1.8

Client Sample ID			TP203_0.0-0.1	TP203_0.2-0.3	TP204_0.0-0.1	TP204_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23443	S20-Jn23444	S20-Jn23445	S20-Jn23446
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	22	< 20	42	< 20
TRH C15-C28	50	mg/kg	460	< 50	470	< 50
TRH C29-C36	50	mg/kg	510	< 50	730	< 50
TRH C10-C36 (Total)	50	mg/kg	992	< 50	1242	< 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	%	90	51	55	101
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	51	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	51	< 50
TRH >C16-C34	100	mg/kg	880	< 100	1000	< 100

Client Sample ID			TP203_0.0-0.1	TP203_0.2-0.3	TP204_0.0-0.1	TP204_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23443	S20-Jn23444	S20-Jn23445	S20-Jn23446
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	380	< 100	620	< 100
TRH >C10-C40 (total)*	100	mg/kg	1260	< 100	1671	< 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	%	96	105	79	110
p-Terphenyl-d14 (surr.)	1	%	121	121	88	124
Heavy Metals						
Arsenic	2	mg/kg	3.3	< 2	3.0	< 2
Cadmium	0.4	mg/kg	1.5	< 0.4	3.1	< 0.4
Chromium	5	mg/kg	11	< 5	23	< 5
Copper	5	mg/kg	230	< 5	370	< 5
Lead	5	mg/kg	60	< 5	130	< 5
Mercury	0.1	mg/kg	1.1	< 0.1	2.3	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	150	13	260	47
% Moisture	1	%	14	1.4	22	8.8

Client Sample ID			TP205_0.0-0.1	TP205_0.5-0.6	FD01	TP206_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23447	S20-Jn23448	S20-Jn23449	S20-Jn23450
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	57	< 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	57	< 50	< 50

Client Sample ID			TP205_0.0-0.1	TP205_0.5-0.6	FD01	TP206_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23447	S20-Jn23448	S20-Jn23449	S20-Jn23450
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	%	90	67	105	97
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	%	96	94	94	97
p-Terphenyl-d14 (surr.)	1	%	97	98	99	102
Heavy Metals						
Arsenic	2	mg/kg	5.2	6.8	2.8	2.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	12	< 5	< 5
Copper	5	mg/kg	10	6.9	< 5	< 5
Lead	5	mg/kg	19	14	43	< 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	170	100	56	7.4
% Moisture	1	%	5.9	9.8	10	9.0

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	%	83	69	72	90
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	%	98	101	98	92
p-Terphenyl-d14 (surr.)	1	%	102	103	100	98

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	3.3	< 2	< 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	< 5	< 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	8.4	15	< 5	< 5
% Moisture	1	%	11	1.3	11	2.5
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	-	-	< 5	-
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	-	-	< 5	-
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	-	-	< 5	-
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	-	-	< 5	-
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	-	-	< 5	-
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	-	-	< 5	-
13C4-PFBA (surr.)	1	%	-	-	92	-
13C5-PFPeA (surr.)	1	%	-	-	103	-
13C5-PFHxA (surr.)	1	%	-	-	111	-
13C4-PFHpA (surr.)	1	%	-	-	96	-
13C8-PFOA (surr.)	1	%	-	-	99	-
13C5-PFNA (surr.)	1	%	-	-	103	-
13C6-PFDA (surr.)	1	%	-	-	120	-
13C2-PFUnDA (surr.)	1	%	-	-	130	-
13C2-PFDoDA (surr.)	1	%	-	-	77	-
13C2-PFTeDA (surr.)	1	%	-	-	90	-
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	-	-	< 5	-
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	-	-	< 5	-
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	-	-	< 5	-
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	-	-	< 5	-
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	-	-	< 5	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	-	-	< 10	-
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	-	-	< 10	-
13C8-FOSA (surr.)	1	%	-	-	71	-
D3-N-MeFOSA (surr.)	1	%	-	-	122	-
D5-N-EtFOSA (surr.)	1	%	-	-	148	-
D7-N-MeFOSE (surr.)	1	%	-	-	100	-
D9-N-EtFOSE (surr.)	1	%	-	-	93	-
D5-N-EtFOSAA (surr.)	1	%	-	-	95	-
D3-N-MeFOSAA (surr.)	1	%	-	-	95	-

Client Sample ID			TP206_0.5-0.6	TP207_0.0-0.1	TP207_0.2-0.3	TP208_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23451	S20-Jn23452	S20-Jn23453	S20-Jn23454
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	-	-	< 5	-
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	-	-	< 5	-
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	-	-	< 5	-
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	-	-	< 5	-
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	-	-	< 5	-
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	-	-	< 5	-
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	-	-	< 5	-
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	-	-	< 5	-
13C3-PFBS (surr.)	1	%	-	-	99	-
18O2-PFHxS (surr.)	1	%	-	-	99	-
13C8-PFOS (surr.)	1	%	-	-	98	-
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	-	-	< 5	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	-	-	< 10	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	-	-	< 5	-
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	-	-	< 5	-
13C2-4:2 FTSA (surr.)	1	%	-	-	82	-
13C2-6:2 FTSA (surr.)	1	%	-	-	85	-
13C2-8:2 FTSA (surr.)	1	%	-	-	104	-
13C2-10:2 FTSA (surr.)	1	%	-	-	84	-
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	-	-	< 5	-
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	-	-	< 5	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	-	-	< 5	-
Sum of WA DWER PFAS (n=10)*	10	ug/kg	-	-	< 10	-
Sum of PFASs (n=30)*	50	ug/kg	-	-	< 50	-

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
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	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	109	77	-	-

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
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	-	-
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	%	96	93	-	-
p-Terphenyl-d14 (surr.)	1	%	101	97	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	< 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	< 5	-	-
Zinc	5	mg/kg	6.0	7.3	-	-
% Moisture	1	%	7.2	11	19	6.2
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	0.2	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	-	-	< 0.05	< 0.05

Client Sample ID			FD05	TP208_0.2-0.3	COMP 1	COMP 2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Jn23455	S20-Jn23456	S20-Jn23457	S20-Jn23458
Date Sampled			Jun 10, 2020	Jun 10, 2020	Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
d-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	-	-	0.12	< 0.05
Endosulfan I	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	-	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	-	-	< 0.2	< 0.2
Toxaphene	1	mg/kg	-	-	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	0.12	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	0.32	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	-	-	118	59
Tetrachloro-m-xylene (surr.)	1	%	-	-	135	82
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	118	59
Tetrachloro-m-xylene (surr.)	1	%	-	-	135	82

Client Sample ID			COMP 3	COMP 4
Sample Matrix			Soil	Soil
Eurofins Sample No.			S20-Jn23459	S20-Jn23460
Date Sampled			Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit		
% Moisture	1	%	6.4	6.6
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05

Client Sample ID			COMP 3	COMP 4
Sample Matrix			Soil	Soil
Eurofins Sample No.			S20-Jn23459	S20-Jn23460
Date Sampled			Jun 10, 2020	Jun 10, 2020
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	74	55
Tetrachloro-m-xylene (surr.)	1	%	93	78
Polychlorinated Biphenyls				
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	74	55
Tetrachloro-m-xylene (surr.)	1	%	93	78

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
Eurofins | mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 19, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Jun 19, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Jun 15, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Jun 18, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Jun 18, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Jun 18, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Jun 18, 2020	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Organochlorine Pesticides	Sydney	Jun 19, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Jun 19, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Project Name:
Project ID: 12520831

Order No.: 12520831
Report #: 725536
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	HA201_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23439	X		X	X		X	X	
2	HA201_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23440			X	X		X	X	
3	TP202_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23441	X		X	X		X	X	
4	TP202_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23442			X	X		X	X	
5	TP203_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23443	X		X	X		X	X	
6	TP203_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23444			X	X		X	X	
7	TP204_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23445	X		X	X		X	X	
8	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23446			X	X		X	X	
9	TP205_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23447	X		X	X		X	X	
10	TP205_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23448	X		X	X		X	X	

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Received: Jun 15, 2020 11:49 AM
Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
11	FD01	Jun 10, 2020		Soil	S20-Jn23449			X	X		X	X	
12	TP206_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23450	X		X	X		X	X	
13	TP206_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23451			X	X		X	X	
14	TP207_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23452	X		X	X		X	X	
15	TP207_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23453			X	X		X	X	X
16	TP208_0.0-0.1	Jun 10, 2020		Soil	S20-Jn23454	X		X	X		X	X	
17	FD05	Jun 10, 2020		Soil	S20-Jn23455			X	X		X	X	
18	TP208_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23456			X	X		X	X	
19	COMP 1	Jun 10, 2020		Soil	S20-Jn23457					X	X		
20	COMP 2	Jun 10, 2020		Soil	S20-Jn23458					X	X		
21	COMP 3	Jun 10, 2020		Soil	S20-Jn23459					X	X		
22	COMP 4	Jun 10, 2020		Soil	S20-Jn23460					X	X		
23	FD03	Jun 10, 2020		Soil	S20-Jn23461		X						

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Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
24	TP202_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23462		X						
25	TP202_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23463		X						
26	FD02	Jun 10, 2020		Soil	S20-Jn23464		X						
27	TP203_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23465		X						
28	TP203_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23466		X						
29	TP204_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23467		X						
30	TP204_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23468		X						
31	TP204_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23469		X						
32	TP205_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23470		X						
33	TP205_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23471		X						
34	TP206_0.2-0.3	Jun 10, 2020		Soil	S20-Jn23472		X						
35	TP206_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23473		X						
36	TP206_1.5-1.6	Jun 10, 2020		Soil	S20-Jn23474		X						

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Due: Jun 22, 2020
Priority: 5 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins | mgt Suite B1	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	
Brisbane Laboratory - NATA Site # 20794													X
Perth Laboratory - NATA Site # 23736													
37	FD04	Jun 10, 2020		Soil	S20-Jn23475		X						
38	TP208_0.5-0.6	Jun 10, 2020		Soil	S20-Jn23476		X						
39	TP208_1.0-1.1	Jun 10, 2020		Soil	S20-Jn23477		X						
Test Counts						9	17	18	18	4	22	18	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	
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							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			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	%	77			70-130	Pass	
TRH C10-C14	%	74			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	90			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
o-Xylene	%	92			70-130	Pass	
Xylenes - Total*	%	92			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	87			70-130	Pass	
TRH C6-C10	%	74			70-130	Pass	
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	98			70-130	Pass	
Acenaphthylene	%	98			70-130	Pass	
Anthracene	%	101			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	%	95			70-130	Pass	
Benzo(g.h.i)perylene	%	99			70-130	Pass	
Benzo(k)fluoranthene	%	85			70-130	Pass	
Chrysene	%	108			70-130	Pass	
Dibenz(a.h)anthracene	%	100			70-130	Pass	
Fluoranthene	%	101			70-130	Pass	
Fluorene	%	102			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	97			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	100			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	107			70-130	Pass	
Cadmium	%	106			70-130	Pass	
Chromium	%	109			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	%	109			70-130	Pass	
Lead	%	110			70-130	Pass	
Mercury	%	103			70-130	Pass	
Nickel	%	107			70-130	Pass	
Zinc	%	106			70-130	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	105			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	108			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	112			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	105			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	106			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	112			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	147			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	111			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	113			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	114			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	105			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	99			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	74			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	110			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	101			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	94			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	99			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	85			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	89			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	95			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	105			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	96			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	92			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	108			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	110			50-150	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	95			70-130	Pass	
4.4'-DDD	%	100			70-130	Pass	
4.4'-DDE	%	104			70-130	Pass	
4.4'-DDT	%	104			70-130	Pass	
a-BHC	%	105			70-130	Pass	
Aldrin	%	104			70-130	Pass	
b-BHC	%	101			70-130	Pass	
d-BHC	%	126			70-130	Pass	
Dieldrin	%	102			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan I			%	99			70-130	Pass	
Endosulfan II			%	100			70-130	Pass	
Endosulfan sulphate			%	103			70-130	Pass	
Endrin			%	106			70-130	Pass	
Endrin aldehyde			%	99			70-130	Pass	
Endrin ketone			%	103			70-130	Pass	
g-BHC (Lindane)			%	104			70-130	Pass	
Heptachlor			%	107			70-130	Pass	
Heptachlor epoxide			%	103			70-130	Pass	
Hexachlorobenzene			%	100			70-130	Pass	
Methoxychlor			%	105			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260			%	87			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Jn19576	NCP	%	108			70-130	Pass	
Acenaphthylene	S20-Jn19576	NCP	%	101			70-130	Pass	
Anthracene	S20-Jn19576	NCP	%	98			70-130	Pass	
Benz(a)anthracene	S20-Jn19576	NCP	%	86			70-130	Pass	
Benzo(a)pyrene	S20-Jn19576	NCP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Jn19576	NCP	%	85			70-130	Pass	
Benzo(g.h.i)perylene	S20-Jn19576	NCP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn19576	NCP	%	106			70-130	Pass	
Chrysene	S20-Jn19576	NCP	%	98			70-130	Pass	
Dibenz(a.h)anthracene	S20-Jn19576	NCP	%	72			70-130	Pass	
Fluoranthene	S20-Jn19576	NCP	%	102			70-130	Pass	
Fluorene	S20-Jn19576	NCP	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn19576	NCP	%	83			70-130	Pass	
Naphthalene	S20-Jn19576	NCP	%	100			70-130	Pass	
Phenanthrene	S20-Jn19576	NCP	%	95			70-130	Pass	
Pyrene	S20-Jn19576	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Jn22537	NCP	%	121			70-130	Pass	
Cadmium	S20-Jn22537	NCP	%	121			70-130	Pass	
Chromium	S20-Jn22222	NCP	%	103			70-130	Pass	
Copper	S20-Jn22537	NCP	%	122			70-130	Pass	
Lead	S20-Jn22222	NCP	%	101			70-130	Pass	
Mercury	S20-Jn22222	NCP	%	105			70-130	Pass	
Nickel	S20-Jn22222	NCP	%	103			70-130	Pass	
Zinc	S20-Jn22222	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Jn23442	CP	%	80			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Jn23442	CP	%	104			70-130	Pass	
Toluene	S20-Jn23442	CP	%	108			70-130	Pass	
Ethylbenzene	S20-Jn23442	CP	%	106			70-130	Pass	
m&p-Xylenes	S20-Jn23442	CP	%	106			70-130	Pass	
o-Xylene	S20-Jn23442	CP	%	106			70-130	Pass	
Xylenes - Total*	S20-Jn23442	CP	%	106			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Jn23442	CP	%	100			70-130	Pass	
TRH C6-C10	S20-Jn23442	CP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S20-Jn23444	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S20-Jn23444	CP	%	97			70-130	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S20-Jn23453	CP	%	109			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S20-Jn23453	CP	%	107			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S20-Jn23453	CP	%	103			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluorononanoic acid (PFNA)	S20-Jn23453	CP	%	106			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S20-Jn23453	CP	%	114			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S20-Jn23453	CP	%	112			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S20-Jn23453	CP	%	109			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S20-Jn23453	CP	%	130			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S20-Jn23453	CP	%	116			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S20-Jn23453	CP	%	120			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S20-Jn23453	CP	%	108			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S20-Jn23453	CP	%	102			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S20-Jn23453	CP	%	94			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S20-Jn23453	CP	%	92			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S20-Jn23453	CP	%	106			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S20-Jn23453	CP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S20-Jn23453	CP	%	93			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S20-Jn23453	CP	%	95			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S20-Jn23453	CP	%	91			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S20-Jn23453	CP	%	97			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S20-Jn23453	CP	%	100			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S20-Jn23453	CP	%	110			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S20-Jn23453	CP	%	107			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorodecanesulfonic acid (PFDS)	S20-Jn23453	CP	%	98			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S20-Jn23453	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S20-Jn23453	CP	%	115			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S20-Jn23453	CP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S20-Jn23453	CP	%	110			50-150	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Jn18210	NCP	%	103			70-130	Pass	
4.4'-DDD	S20-Jn18210	NCP	%	111			70-130	Pass	
4.4'-DDE	S20-Jn18210	NCP	%	113			70-130	Pass	
4.4'-DDT	S20-Jn18210	NCP	%	109			70-130	Pass	
a-BHC	S20-Jn18210	NCP	%	103			70-130	Pass	
Aldrin	S20-Jn18210	NCP	%	81			70-130	Pass	
b-BHC	S20-Jn18210	NCP	%	104			70-130	Pass	
d-BHC	S20-Jn18210	NCP	%	129			70-130	Pass	
Dieldrin	S20-Jn18210	NCP	%	112			70-130	Pass	
Endosulfan I	S20-Jn18210	NCP	%	106			70-130	Pass	
Endosulfan II	S20-Jn18210	NCP	%	108			70-130	Pass	
Endosulfan sulphate	S20-Jn18210	NCP	%	110			70-130	Pass	
Endrin	S20-Jn18210	NCP	%	115			70-130	Pass	
Endrin aldehyde	S20-Jn18210	NCP	%	95			70-130	Pass	
Endrin ketone	S20-Jn18210	NCP	%	107			70-130	Pass	
g-BHC (Lindane)	S20-Jn18210	NCP	%	106			70-130	Pass	
Heptachlor	S20-Jn18210	NCP	%	109			70-130	Pass	
Heptachlor epoxide	S20-Jn18210	NCP	%	110			70-130	Pass	
Hexachlorobenzene	S20-Jn18210	NCP	%	105			70-130	Pass	
Methoxychlor	S20-Jn18210	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S20-Jn18159	NCP	%	111			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Jn22527	NCP	mg/kg	2.7	2.4	11	30%	Pass	
Cadmium	S20-Jn22527	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Jn22527	NCP	mg/kg	11	10	6.0	30%	Pass	
Copper	S20-Jn22527	NCP	mg/kg	7.2	9.2	24	30%	Pass	
Lead	S20-Jn22527	NCP	mg/kg	15	13	14	30%	Pass	
Mercury	S20-Jn22527	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Jn22527	NCP	mg/kg	10	15	39	30%	Fail	Q15
Zinc	S20-Jn22527	NCP	mg/kg	27	28	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Jn22879	NCP	%	21	20	3.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Jn23441	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Jn23441	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Jn23441	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Jn23441	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Jn23441	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Jn23441	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Jn23443	CP	mg/kg	22	28	26	30%	Pass	
TRH C15-C28	S20-Jn23443	CP	mg/kg	460	620	31	30%	Fail	Q15
TRH C29-C36	S20-Jn23443	CP	mg/kg	510	670	26	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Jn23443	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Jn23443	CP	mg/kg	880	1200	29	30%	Pass	
TRH >C34-C40	S20-Jn23443	CP	mg/kg	380	460	20	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Jn23443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Jn23453	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Jn23453	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Jn23453	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Jn23453	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Jn23453	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S20-Jn24628	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S20-Jn24628	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluoroheptanesulfonic acid (PFHpS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S20-Jn24628	NCP	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)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S20-Jn24628	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S20-Jn24628	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Jn26965	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-Jn26965	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-Jn26965	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S20-Jn26965	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Jn26965	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Jn26965	NCP	mg/kg	< 0.5	< 0.5	<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
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
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).
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
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)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
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.

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#AU04_Enviro_Sample_NSW

To: Andrew Black
Subject: RE: 1 DAY TAT ADDITIONAL: FW: Eurofins Test Results, Invoice - Report 725536 : Site 12520831

From: Andrew Brajlih <Andrew.Brajlih@ghd.com>
Sent: Friday, 3 July 2020 9:03 AM
To: Andrew Black <AndrewBlack@eurofins.com>
Cc: Joanna Sylvester <Joanna.Sylvester@ghd.com>
Subject: RE: Eurofins Test Results, Invoice - Report 725536 : Site 12520831

EXTERNAL EMAIL*

Hi Andrew, may I please request additional analysis under this job (12520831). I am looking to get sample TP204_0.2-0.3 analysed for asbestos. I am looking to get this on 24hr TAT if possible
Thanks for your help
Regards

Andrew Brajlih
B.Env. Sci. & Mgmt / M. Env. & Bus. Mgmt
Environmental Scientist
Licensed Asbestos Assessor (LAA001399)

GHD
Proudly employee owned
T: +61 2 4979 9088 | M: 0421 730 848 | E: andrew.brajlih@ghd.com
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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd NEWCASTLE**
Contact name:	Andrew Brajlih
Project name:	ADDITIONAL
Project ID:	12520831
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Jul 3, 2020 9:05 AM
Eurofins reference:	**729539**

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 : 20.2 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.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Andrew Brajlih - Andrew.Brajlih@ghd.com.

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

eurofins | Environment Testing

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Andrew Brajlih
Report	729539-AID
Project Name	ADDITIONAL
Project ID	12520831
Received Date	Jul 03, 2020
Date Reported	Jul 06, 2020

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.*

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.

Project Name ADDITIONAL
Project ID 12520831
Date Sampled Jun 10, 2020
Report 729539-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP204_0.2-0.3	20-JI05239	Jun 10, 2020	Approximate Sample 74g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction 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	Jul 03, 2020	Indefinite

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NATA # 1261 Site # 18217

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IANZ # 1327

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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
Project ID: 12520831

Order No.: 12520831
Report #: 729539
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Jul 3, 2020 9:05 AM
Due: Jul 6, 2020
Priority: 1 Day
Contact Name: Andrew Brajlih

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	TP204_0.2-0.3	Jun 10, 2020		Soil	S20-Jl05239	X
Test Counts						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 sample received was not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	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.

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS Page ____ of ____

Company Name :	GHD	Contact Name:	Alison Monkley	Purchase Order :	2219573	COC Number :	
Office Address :	24 Honeysuckle Drive	Project Manager :	Alison Monkley	PROJECT Number :	2219573	Eurofins | mgt quote ID :	141113GHDN
	Newcastle 2300	Email for results :	Alison Monkley / Andrew Brajlih	PROJECT Name :	Belmont Desal Design & EA	Data output format:	

Special Directions & Comments :

Please analyse the following as composite sample for Suite B13

COMP 1- BH401_0.2-0.3, BH402_0.2-0.3, BH403_0.2-0.3

COMP 2- BH410_0.2-0.3, BH411_0.2-0.3, BH412_0.2-0.3

COMP3 - BH404_0.5-0.6, BH405_0.5-0.6, BH406_0.5-0.6

COMP4 - BH407_0.2-0.3, BH408_0.2-0.3, BH409_0.2-0.3

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	TRH/BTEXN/PAH	Heavy metals (As, Cd, Cr,Cu, Ni, Pb, Zn, Hg	Asbestos	Suite B13 (OCPs / PCBs)	Containers: 1000P	500P	250P	60P	1000A	500A	125A	40Vial	Sample comments:
1	BH401_0.2-0.3	8/09/2020	S	X	X	X	1									1. composite samples and analysed for OCP/PCB
2	BH401_0.5-0.6	8/09/2020	S		X											
3	FD01	8/09/2020	S													2. comp samples and analyse for OCP/PCB
4	BH401_1.0-1.1	8/09/2020	S													
5	BH402_0.2-0.3	8/09/2020	S	X	X	X	1									
6	BH402_0.5-0.6	8/09/2020	S		X		4									4. comp samples and analyse for OCP/PCB
7	BH402_1.0-1.1	8/09/2020	S													
8	BH403_0.2-0.3	8/09/2020	S		X	X	1									
9	BH403_0.5-0.6	8/09/2020	S		X											
10	BH403_1.0-1.1	8/09/2020	S													
11	BH404_0.2-0.3	8/09/2020	S	X	X	X	1									
12	BH404_0.5-0.6	8/09/2020	S		X											
13	BH404_1.0-1.1	8/09/2020	S													
14	BH405_0.2-0.3	8/09/2020	S		X	X	2									
15	FD02	8/09/2020	S													
16	BH405_0.5-0.6	8/09/2020	S													
17	BH405_0.7-0.8	8/09/2020	S		X		4									
18	BH406_0.2-0.3	8/09/2020	S	X	X	X	2									
19	FD03	8/09/2020	S	X	X											

Relinquished By:	Laboratory Staff: Received By:	Turn around time	Method Of Shipment	Temperature on arrival:
A Brajlih	Suzanne Ford	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	17.06 °C
Date & Time::	Date & Time: 10/9/2020 1:44PM	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature:	Signature:		☐ Postal	143366
			Courier Consignment # :	

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page ____ of ____

Company Name :	GHD	Contact Name:	Alison Monkley	Purchase Order :	2219573	COC Number :	
Office Address :	24 Honeysuckle Drive	Project Manager :	Alison Monkley	PROJECT Number :	2219573	Eurofins | mgt quote ID :	141113GHDN
	Newcastle 2300	Email for results :	Alison Monkley / Andrew Brajlih	PROJECT Name :	Belmont Desal Design & EA	Data output format:	

Special Directions & Comments :

Please analyse the following as composite sample for Suite B13

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	TRH/BTEXN/PAH	Heavy metals (As, Cd, Cr,Cu, Ni, Pb, Zn, Hg	Asbestos	Suite B13 (OCPs / PCBs)	Containers: 1000P	500P	250P	60P	1000A	500A	125A	40Vial	Sample comments:
1	BH406_0.5-0.6	8/09/2020	S		X											
2	BH406_1.0-1.1	8/09/2020	S													
3	BH407_0.2-0.3	9/09/2020	S	X	X	X	2									2. comp samples and analyse for OCP/PCB
4	FD04	9/09/2020	S		X											
5	BH407_0.5-0.6	9/09/2020	S	X												
6	BH407_1.0-1.1	9/09/2020	S		X											3. comp samples and analyse for OCP/PCB
7	BH408_0.2-0.3	9/09/2020	S		X	X	2									
8	BH408_0.5-0.6	9/09/2020	S		X											
9	BH408_1.0-1.1	9/09/2020	S													4. Comp and analyse for OCP/PCB
10	BH409_0.2-0.3	9/09/2020	S		X	X	3									
11	BH409_0.5-0.6	9/09/2020	S				4									
12	BH409_1.0-1.1	9/09/2020	S		X											
13	BH410_0.2-0.3	9/09/2020	S	X	X	X	3									
14	BH410_0.5-0.6	9/09/2020	S		X											
15	BH410_1.0-1.1	9/09/2020	S													
16	BH411_0.2-0.3	9/09/2020	S		X	X	3									
17	BH411_0.5-0.6	9/09/2020	S		X											
18	BH411_1.0-1.1	9/09/2020	S													
19	BH412_0.2-0.3	9/09/2020	S	X	X	X	3									

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

	Laboratory Staff	Turn around time	Method Of Shipment	
Relinquished By: A.Brajlih	Received By: Suzanne Reid	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	Temperature on arrival: 17.06°C
Date & Time:: 44083	Date & Time: 10/9/2020 1:44PM	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number: 143366
Signature:	Signature:		☐ Postal	
			Courier Consignment # :	

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

☐ **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 Page _____ of _____

Company Name :	GHD	Contact Name:	Alison Monkley	Purchase Order :	2219573
Office Address :	24 Honeysuckle Drive	Project Manager :	Alison Monkley	PROJECT Number :	2219573
	Newcastle 2300	Email for results :	Alison Monkley / Andrew Brailih	PROJECT Name :	Belmont Desal Design & EA

COC Number :
Eurofins | mgt quote ID : 141113GHDN
Data output format:

Special Directions & Comments :
Please analyse the following as composite sample for Suite B13

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	TRH/BTEXN/PAH	Heavy metals (As, Cd, Cr,Cu, Ni, Pb, Zn, Hg	Asbestos	Suite B13 (OCPs / PCBs)
1	BH412_0.5-0.6	9/09/2020	S		X		4
2	BH412_1.0-1.1	9/09/2020	S				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							

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:

1000P	500P	250P	60P	1000A	500A	125A	40Vial

Sample comments:
4. Comp and analyse for OCP/PCB

Laboratory Staff

Relinquished By:
Date & Time::
Signature:

Received By: Suzanne Fong
Date & Time: 10/9/2020 1:40PM
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: 17.06°C
Report number: 743366

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Christchurch
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IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Alison Monkley
Project name:	BELMONT DESAL DESIGN & EA
Project ID:	2219573
Turnaround time:	5 Day
Date/Time received	Sep 10, 2020 1:41 PM
Eurofins reference	743366

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 : 17.1 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

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 Alison Monkley - alison.monkley@ghd.com.au.

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

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Alison Monkley
Report	743366-AID
Project Name	BELMONT DESAL DESIGN & EA
Project ID	2219573
Received Date	Sep 10, 2020
Date Reported	Sep 17, 2020

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.*

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.

Project Name BELMONT DESAL DESIGN & EA
Project ID 2219573
Date Sampled Sep 08, 2020 to Sep 09, 2020
Report 743366-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH401_0.2-0.3	20-Se18646	Sep 08, 2020	Approximate Sample 116g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH402_0.2-0.3	20-Se18648	Sep 08, 2020	Approximate Sample 421g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH403_0.2-0.3	20-Se18650	Sep 08, 2020	Approximate Sample 95g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH404_0.2-0.3	20-Se18652	Sep 08, 2020	Approximate Sample 256g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH405_0.2-0.3	20-Se18654	Sep 08, 2020	Approximate Sample 510g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH406_0.2-0.3	20-Se18656	Sep 08, 2020	Approximate Sample 264g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH407_0.2-0.3	20-Se18659	Sep 09, 2020	Approximate Sample 284g Sample consisted of: Brown coarse-grained soil, brick, cement, rocks and debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH408_0.2-0.3	20-Se18663	Sep 09, 2020	Approximate Sample 242g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH409_0.2-0.3	20-Se18665	Sep 09, 2020	Approximate Sample 260g Sample consisted of: Brown fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH410_0.2-0.3	20-Se18667	Sep 09, 2020	Approximate Sample 283g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH411_0.2-0.3	20-Se18669	Sep 09, 2020	Approximate Sample 263g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH412_0.2-0.3	20-Se18671	Sep 09, 2020	Approximate Sample 325g Sample consisted of: Brown fine-grained sandy soil, rocks and organic debris	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	Sep 10, 2020	Indefinite

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

Project Name: BELMONT DESAL DESIGN & EA
Project ID: 2219573

Order No.: 2219573
Report #: 743366
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Sep 10, 2020 1:41 PM
Due: Sep 17, 2020
Priority: 5 Day
Contact Name: Alison Monkley

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
Newcastle Laboratory												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	BH401_0.2-0.3	Sep 08, 2020		Soil	S20-Se18646	X				X	X	
2	BH401_0.5-0.6	Sep 08, 2020		Soil	S20-Se18647			X		X		
3	BH402_0.2-0.3	Sep 08, 2020		Soil	S20-Se18648	X				X	X	
4	BH402_0.5-0.6	Sep 08, 2020		Soil	S20-Se18649			X		X		
5	BH403_0.2-0.3	Sep 08, 2020		Soil	S20-Se18650	X		X		X		
6	BH403_0.5-0.6	Sep 08, 2020		Soil	S20-Se18651			X		X		
7	BH404_0.2-0.3	Sep 08, 2020		Soil	S20-Se18652	X				X	X	
8	BH404_0.5-0.6	Sep 08, 2020		Soil	S20-Se18653			X		X		
9	BH405_0.2-0.3	Sep 08, 2020		Soil	S20-Se18654	X		X		X		

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Project ID: 2219573

Order No.: 2219573
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Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Sep 10, 2020 1:41 PM
Due: Sep 17, 2020
Priority: 5 Day
Contact Name: Alison Monkley

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
10	BH405_0.7-0.8	Sep 08, 2020		Soil	S20-Se18655			X		X		
11	BH406_0.2-0.3	Sep 08, 2020		Soil	S20-Se18656	X				X	X	
12	FD03	Sep 08, 2020		Soil	S20-Se18657					X	X	
13	BH406_0.5-0.6	Sep 08, 2020		Soil	S20-Se18658			X		X		
14	BH407_0.2-0.3	Sep 09, 2020		Soil	S20-Se18659	X				X	X	
15	FD04	Sep 09, 2020		Soil	S20-Se18660			X		X		
16	BH407_0.5-0.6	Sep 09, 2020		Soil	S20-Se18661					X		X
17	BH407_1.0-1.1	Sep 09, 2020		Soil	S20-Se18662			X		X		
18	BH408_0.2-0.3	Sep 09, 2020		Soil	S20-Se18663	X		X		X		
19	BH408_0.5-0.6	Sep 09, 2020		Soil	S20-Se18664			X		X		
20	BH409_0.2-0.3	Sep 09, 2020		Soil	S20-Se18665	X		X		X		
21	BH409_1.0-1.1	Sep 09, 2020		Soil	S20-Se18666			X		X		
22	BH410_0.2-0.3	Sep 09, 2020		Soil	S20-Se18667	X				X	X	

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Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
23	BH410_0.5-0.6	Sep 09, 2020		Soil	S20-Se18668			X		X		
24	BH411_0.2-0.3	Sep 09, 2020		Soil	S20-Se18669	X		X		X		
25	BH411_0.5-0.6	Sep 09, 2020		Soil	S20-Se18670			X		X		
26	BH412_0.2-0.3	Sep 09, 2020		Soil	S20-Se18671	X				X	X	
27	FD01	Sep 08, 2020		Soil	S20-Se18901		X					
28	BH401_1.0-1.1	Sep 08, 2020		Soil	S20-Se18902		X					
29	BH402_1.0-1.1	Sep 08, 2020		Soil	S20-Se18903		X					
30	BH403_1.0-1.1	Sep 08, 2020		Soil	S20-Se18904		X					
31	BH404_1.0-1.1	Sep 08, 2020		Soil	S20-Se18905		X					
32	FD02	Sep 08, 2020		Soil	S20-Se18906		X					
33	BH405_0.5-0.6	Sep 08, 2020		Soil	S20-Se18907		X					
34	BH406_1.0-1.1	Sep 08, 2020		Soil	S20-Se18908		X					
35	BH408_1.0-1.1	Sep 09, 2020		Soil	S20-Se18909		X					

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Order No.: 2219573
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Received: Sep 10, 2020 1:41 PM
Due: Sep 17, 2020
Priority: 5 Day
Contact Name: Alison Monkley

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
36	BH410_1.0-1.1	Sep 09, 2020		Soil	S20-Se18910		X					
37	BH411_1.0-1.1	Sep 09, 2020		Soil	S20-Se18911		X					
38	BH412_1.0-1.1	Sep 09, 2020		Soil	S20-Se18912		X					
39	BH412_0.5-0.6	Sep 09, 2020		Soil	S20-Se19300			X		X		
40	COMPOSITE 1	Sep 09, 2020		Soil	S20-Se21964				X	X		
41	COMPOSITE 2	Sep 09, 2020		Soil	S20-Se21965				X	X		
42	COMPOSITE 3	Sep 09, 2020		Soil	S20-Se21966				X	X		
43	COMPOSITE 4	Sep 09, 2020		Soil	S20-Se21967				X	X		
Test Counts						12	12	18	4	31	8	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

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:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	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.

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Certificate of Analysis

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Alison Monkley**

Report **743366-S**
Project name BELMONT DESAL DESIGN & EA
Project ID 2219573
Received Date Sep 10, 2020

Client Sample ID			**BH401_0.2-0.3**	**BH401_0.5-0.6**	**BH402_0.2-0.3**	**BH402_0.5-0.6**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Se18646**	**S20-Se18647**	**S20-Se18648**	**S20-Se18649**
Date Sampled			**Sep 08, 2020**	**Sep 08, 2020**	**Sep 08, 2020**	**Sep 08, 2020**
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	66	-	83	-
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	-
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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	-
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	-

Client Sample ID			BH401_0.2-0.3	BH401_0.5-0.6	BH402_0.2-0.3	BH402_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18646	S20-Se18647	S20-Se18648	S20-Se18649
Date Sampled			Sep 08, 2020	Sep 08, 2020	Sep 08, 2020	Sep 08, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	93	-	108	-
p-Terphenyl-d14 (surr.)	1	%	90	-	107	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	2.7	4.2	4.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	140	9.4
Copper	5	mg/kg	< 5	< 5	8.3	6.9
Lead	5	mg/kg	< 5	< 5	10.0	12
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	6.0	< 5
Zinc	5	mg/kg	8.5	5.7	38	44
% Moisture	1	%	2.1	2.1	3.5	4.0

Client Sample ID			BH403_0.2-0.3	BH403_0.5-0.6	BH404_0.2-0.3	BH404_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18650	S20-Se18651	S20-Se18652	S20-Se18653
Date Sampled			Sep 08, 2020	Sep 08, 2020	Sep 08, 2020	Sep 08, 2020
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	-	-	1.2	-
o-Xylene	0.1	mg/kg	-	-	0.7	-
Xylenes - Total*	0.3	mg/kg	-	-	1.9	-
4-Bromofluorobenzene (surr.)	1	%	-	-	83	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	-	< 20	-

Client Sample ID			BH403_0.2-0.3	BH403_0.5-0.6	BH404_0.2-0.3	BH404_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18650	S20-Se18651	S20-Se18652	S20-Se18653
Date Sampled			Sep 08, 2020	Sep 08, 2020	Sep 08, 2020	Sep 08, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	94	-
p-Terphenyl-d14 (surr.)	1	%	-	-	91	-
Heavy Metals						
Arsenic	2	mg/kg	2.6	2.1	4.2	3.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	6.2	6.6
Copper	5	mg/kg	11	9.2	22	24
Lead	5	mg/kg	13	7.3	21	10
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	< 5	< 5	5.1	< 5
Zinc	5	mg/kg	87	33	130	67
% Moisture	1	%	6.6	3.4	10	10.0

Client Sample ID			BH405_0.2-0.3	BH405_0.7-0.8	BH406_0.2-0.3	FD03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18654	S20-Se18655	S20-Se18656	S20-Se18657
Date Sampled			Sep 08, 2020	Sep 08, 2020	Sep 08, 2020	Sep 08, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	92	85
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
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	61	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	61	< 50
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	%	-	-	99	94
p-Terphenyl-d14 (surr.)	1	%	-	-	99	94

Client Sample ID			BH405_0.2-0.3	BH405_0.7-0.8	BH406_0.2-0.3	FD03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18654	S20-Se18655	S20-Se18656	S20-Se18657
Date Sampled			Sep 08, 2020	Sep 08, 2020	Sep 08, 2020	Sep 08, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.8	4.4	3.5	3.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	11	6.2	6.2
Copper	5	mg/kg	22	25	17	16
Lead	5	mg/kg	10	11	12	13
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.7	8.0	< 5	< 5
Zinc	5	mg/kg	83	89	110	110
% Moisture	1	%	5.3	5.6	3.8	3.6

Client Sample ID			BH406_0.5-0.6	BH407_0.2-0.3	FD04	BH407_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18658	S20-Se18659	S20-Se18660	S20-Se18661
Date Sampled			Sep 08, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	0.3	-	< 0.2
o-Xylene	0.1	mg/kg	-	0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	0.4	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	93	-	64
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	-	51
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	51
TRH >C16-C34	100	mg/kg	-	160	-	300
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	160	-	351
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	< 20	-	< 20
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C10-C14	20	mg/kg	-	21	-	35
TRH C15-C28	50	mg/kg	-	120	-	240
TRH C29-C36	50	mg/kg	-	70	-	110
TRH C10-C36 (Total)	50	mg/kg	-	211	-	385
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

Client Sample ID			BH406_0.5-0.6	BH407_0.2-0.3	FD04	BH407_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18658	S20-Se18659	S20-Se18660	S20-Se18661
Date Sampled			Sep 08, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	-	94	-	95
p-Terphenyl-d14 (surr.)	1	%	-	94	-	94
Heavy Metals						
Arsenic	2	mg/kg	12	5.8	5.7	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	8.3	13	-
Copper	5	mg/kg	19	18	20	-
Lead	5	mg/kg	13	14	15	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	5.8	8.5	-
Zinc	5	mg/kg	160	91	110	-
% Moisture	1	%	3.4	6.7	7.3	7.9

Client Sample ID			BH407_1.0-1.1	BH408_0.2-0.3	BH408_0.5-0.6	BH409_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18662	S20-Se18663	S20-Se18664	S20-Se18665
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.7	2.1	< 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	34	8.9	< 5
Lead	5	mg/kg	< 5	24	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	7.8	200	36	16
% Moisture	1	%	3.0	2.1	< 1	1.7

Client Sample ID			BH409_1.0-1.1	BH410_0.2-0.3	BH410_0.5-0.6	BH411_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18666	S20-Se18667	S20-Se18668	S20-Se18669
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
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	%	-	53	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	110	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	110	-	-
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	< 20	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	85	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-C36 (Total)	50	mg/kg	-	85	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	96	-	-
p-Terphenyl-d14 (surr.)	1	%	-	96	-	-

Client Sample ID			BH409_1.0-1.1	BH410_0.2-0.3	BH410_0.5-0.6	BH411_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18666	S20-Se18667	S20-Se18668	S20-Se18669
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.3	2.3	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	5.9	< 5	< 5
Copper	5	mg/kg	< 5	15	< 5	6.3
Lead	5	mg/kg	< 5	8.2	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	7.8	< 5	< 5
Zinc	5	mg/kg	< 5	56	12	24
% Moisture	1	%	3.3	5.0	2.1	3.4

Client Sample ID			BH411_0.5-0.6	BH412_0.2-0.3	BH412_0.5-0.6	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18670	S20-Se18671	S20-Se19300	S20-Se21964
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
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	%	-	54	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	< 20	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			BH411_0.5-0.6	BH412_0.2-0.3	BH412_0.5-0.6	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18670	S20-Se18671	S20-Se19300	S20-Se21964
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	92	-	-
p-Terphenyl-d14 (surr.)	1	%	-	92	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	3.2	< 2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	< 5	< 5	-
Copper	5	mg/kg	< 5	11	7.0	-
Lead	5	mg/kg	< 5	8.9	11	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	6.0	34	19	-
% Moisture	1	%	3.0	4.6	4.4	5.5
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	1	mg/kg	-	-	-	< 1

Client Sample ID			BH411_0.5-0.6	BH412_0.2-0.3	BH412_0.5-0.6	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Se18670	S20-Se18671	S20-Se19300	S20-Se21964
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
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	%	-	-	-	60
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	86
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	%	-	-	-	60
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	86

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Se21965	S20-Se21966	S20-Se21967
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit			
% Moisture	1	%	4.5	3.5	4.2
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S20-Se21965	S20-Se21966	S20-Se21967
Date Sampled			Sep 09, 2020	Sep 09, 2020	Sep 09, 2020
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	57	61	50
Tetrachloro-m-xylene (surr.)	1	%	86	91	82
Polychlorinated Biphenyls					
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	57	61	50
Tetrachloro-m-xylene (surr.)	1	%	86	91	82

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
Eurofins Suite B4			
BTEX	Sydney	Sep 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 11, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Sep 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 11, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 11, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Sep 11, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Sep 11, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Organochlorine Pesticides	Sydney	Sep 15, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Sep 15, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Company Name:	GHD Pty Ltd NEWCASTLE	**Order No.:**	2219573	**Received:**	Sep 10, 2020 1:41 PM
Address:	3/24 Honeysuckle Dve Newcastle NSW 2300	**Report #:**	743366	**Due:**	Sep 17, 2020
		Phone:	02 4979 9999	**Priority:**	5 Day
		Fax:	02 4979 9988	**Contact Name:**	Alison Monkley
Project Name:	BELMONT DESAL DESIGN & EA				
Project ID:	2219573				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
Newcastle Laboratory												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	BH401_0.2-0.3	Sep 08, 2020		Soil	S20-Se18646	X				X	X	
2	BH401_0.5-0.6	Sep 08, 2020		Soil	S20-Se18647			X		X		
3	BH402_0.2-0.3	Sep 08, 2020		Soil	S20-Se18648	X				X	X	
4	BH402_0.5-0.6	Sep 08, 2020		Soil	S20-Se18649			X		X		
5	BH403_0.2-0.3	Sep 08, 2020		Soil	S20-Se18650	X		X		X		
6	BH403_0.5-0.6	Sep 08, 2020		Soil	S20-Se18651			X		X		
7	BH404_0.2-0.3	Sep 08, 2020		Soil	S20-Se18652	X				X	X	
8	BH404_0.5-0.6	Sep 08, 2020		Soil	S20-Se18653			X		X		
9	BH405_0.2-0.3	Sep 08, 2020		Soil	S20-Se18654	X		X		X		

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IANZ # 1290

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

Project Name: BELMONT DESAL DESIGN & EA
Project ID: 2219573

Order No.: 2219573
Report #: 743366
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Sep 10, 2020 1:41 PM
Due: Sep 17, 2020
Priority: 5 Day
Contact Name: Alison Monkley

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
10	BH405_0.7-0.8	Sep 08, 2020		Soil	S20-Se18655			X		X		
11	BH406_0.2-0.3	Sep 08, 2020		Soil	S20-Se18656	X				X	X	
12	FD03	Sep 08, 2020		Soil	S20-Se18657					X	X	
13	BH406_0.5-0.6	Sep 08, 2020		Soil	S20-Se18658			X		X		
14	BH407_0.2-0.3	Sep 09, 2020		Soil	S20-Se18659	X				X	X	
15	FD04	Sep 09, 2020		Soil	S20-Se18660			X		X		
16	BH407_0.5-0.6	Sep 09, 2020		Soil	S20-Se18661					X		X
17	BH407_1.0-1.1	Sep 09, 2020		Soil	S20-Se18662			X		X		
18	BH408_0.2-0.3	Sep 09, 2020		Soil	S20-Se18663	X		X		X		
19	BH408_0.5-0.6	Sep 09, 2020		Soil	S20-Se18664			X		X		
20	BH409_0.2-0.3	Sep 09, 2020		Soil	S20-Se18665	X		X		X		
21	BH409_1.0-1.1	Sep 09, 2020		Soil	S20-Se18666			X		X		
22	BH410_0.2-0.3	Sep 09, 2020		Soil	S20-Se18667	X				X	X	

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NATA # 1261 Site # 20794

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Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
23	BH410_0.5-0.6	Sep 09, 2020		Soil	S20-Se18668			X		X		
24	BH411_0.2-0.3	Sep 09, 2020		Soil	S20-Se18669	X		X		X		
25	BH411_0.5-0.6	Sep 09, 2020		Soil	S20-Se18670			X		X		
26	BH412_0.2-0.3	Sep 09, 2020		Soil	S20-Se18671	X				X	X	
27	FD01	Sep 08, 2020		Soil	S20-Se18901		X					
28	BH401_1.0-1.1	Sep 08, 2020		Soil	S20-Se18902		X					
29	BH402_1.0-1.1	Sep 08, 2020		Soil	S20-Se18903		X					
30	BH403_1.0-1.1	Sep 08, 2020		Soil	S20-Se18904		X					
31	BH404_1.0-1.1	Sep 08, 2020		Soil	S20-Se18905		X					
32	FD02	Sep 08, 2020		Soil	S20-Se18906		X					
33	BH405_0.5-0.6	Sep 08, 2020		Soil	S20-Se18907		X					
34	BH406_1.0-1.1	Sep 08, 2020		Soil	S20-Se18908		X					
35	BH408_1.0-1.1	Sep 09, 2020		Soil	S20-Se18909		X					

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Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
36	BH410_1.0-1.1	Sep 09, 2020		Soil	S20-Se18910		X					
37	BH411_1.0-1.1	Sep 09, 2020		Soil	S20-Se18911		X					
38	BH412_1.0-1.1	Sep 09, 2020		Soil	S20-Se18912		X					
39	BH412_0.5-0.6	Sep 09, 2020		Soil	S20-Se19300			X		X		
40	COMPOSITE 1	Sep 09, 2020		Soil	S20-Se21964				X	X		
41	COMPOSITE 2	Sep 09, 2020		Soil	S20-Se21965				X	X		
42	COMPOSITE 3	Sep 09, 2020		Soil	S20-Se21966				X	X		
43	COMPOSITE 4	Sep 09, 2020		Soil	S20-Se21967				X	X		
Test Counts						12	12	18	4	31	8	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							
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	
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							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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							
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							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-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	< 1			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							
BTEX							
Benzene	%	100			70-130	Pass	
Toluene	%	103			70-130	Pass	
Ethylbenzene	%	105			70-130	Pass	
m&p-Xylenes	%	108			70-130	Pass	
o-Xylene	%	106			70-130	Pass	
Xylenes - Total*	%	107			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	112			70-130	Pass	
TRH C6-C10	%	81			70-130	Pass	
TRH >C10-C16	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	78			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	120			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	91			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthylene	%	119			70-130	Pass	
Anthracene	%	95			70-130	Pass	
Benz(a)anthracene	%	121			70-130	Pass	
Benzo(a)pyrene	%	126			70-130	Pass	
Benzo(b&j)fluoranthene	%	124			70-130	Pass	
Benzo(g.h.i)perylene	%	119			70-130	Pass	
Benzo(k)fluoranthene	%	122			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	127			70-130	Pass	
Fluoranthene	%	119			70-130	Pass	
Fluorene	%	114			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	125			70-130	Pass	
Naphthalene	%	108			70-130	Pass	
Phenanthrene	%	108			70-130	Pass	
Pyrene	%	119			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	113			80-120	Pass	
Cadmium	%	111			80-120	Pass	
Chromium	%	109			80-120	Pass	
Copper	%	107			80-120	Pass	
Lead	%	108			80-120	Pass	
Mercury	%	111			80-120	Pass	
Nickel	%	107			80-120	Pass	
Zinc	%	105			80-120	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	87			70-130	Pass	
4.4'-DDD	%	91			70-130	Pass	
4.4'-DDE	%	88			70-130	Pass	
4.4'-DDT	%	89			70-130	Pass	
a-BHC	%	88			70-130	Pass	
Aldrin	%	87			70-130	Pass	
b-BHC	%	85			70-130	Pass	
d-BHC	%	106			70-130	Pass	
Dieldrin	%	86			70-130	Pass	
Endosulfan I	%	87			70-130	Pass	
Endosulfan II	%	85			70-130	Pass	
Endosulfan sulphate	%	89			70-130	Pass	
Endrin	%	87			70-130	Pass	
Endrin aldehyde	%	85			70-130	Pass	
Endrin ketone	%	82			70-130	Pass	
g-BHC (Lindane)	%	88			70-130	Pass	
Heptachlor	%	86			70-130	Pass	
Heptachlor epoxide	%	87			70-130	Pass	
Hexachlorobenzene	%	82			70-130	Pass	
Methoxychlor	%	90			70-130	Pass	
Toxaphene	%	93			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	82			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Se19997	NCP	%	87			70-130	Pass	
Toluene	S20-Se19997	NCP	%	76			70-130	Pass	
Ethylbenzene	S20-Se19997	NCP	%	79			70-130	Pass	
m&p-Xylenes	S20-Se19997	NCP	%	81			70-130	Pass	
o-Xylene	S20-Se19997	NCP	%	81			70-130	Pass	
Xylenes - Total*	S20-Se19997	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Se19997	NCP	%	79			70-130	Pass	
TRH C6-C10	S20-Se18467	NCP	%	72			70-130	Pass	
TRH >C10-C16	W20-Se17763	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S20-Se18467	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	W20-Se17763	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Se13488	NCP	%	97			70-130	Pass	
Acenaphthylene	S20-Se13488	NCP	%	104			70-130	Pass	
Anthracene	S20-Se13488	NCP	%	108			70-130	Pass	
Benz(a)anthracene	S20-Se13488	NCP	%	107			70-130	Pass	
Benzo(a)pyrene	S20-Se13488	NCP	%	107			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Se13488	NCP	%	108			70-130	Pass	
Benzo(g.h.i)perylene	S20-Se13488	NCP	%	79			70-130	Pass	
Benzo(k)fluoranthene	S20-Se13488	NCP	%	108			70-130	Pass	
Chrysene	S20-Se13488	NCP	%	102			70-130	Pass	
Dibenz(a.h)anthracene	S20-Se13488	NCP	%	94			70-130	Pass	
Fluoranthene	S20-Se13488	NCP	%	106			70-130	Pass	
Fluorene	S20-Se13488	NCP	%	97			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Se13488	NCP	%	92			70-130	Pass	
Naphthalene	S20-Se13488	NCP	%	93			70-130	Pass	
Phenanthrene	S20-Se13488	NCP	%	92			70-130	Pass	
Pyrene	S20-Se13488	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Se18646	CP	%	101			75-125	Pass	
Cadmium	S20-Se18646	CP	%	96			75-125	Pass	
Chromium	S20-Se18646	CP	%	95			75-125	Pass	
Copper	S20-Se18646	CP	%	93			75-125	Pass	
Lead	S20-Se18646	CP	%	95			75-125	Pass	
Mercury	S20-Se18646	CP	%	100			75-125	Pass	
Nickel	S20-Se18646	CP	%	94			75-125	Pass	
Zinc	S20-Se18646	CP	%	93			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Se18667	CP	%	101			75-125	Pass	
Cadmium	S20-Se18667	CP	%	98			75-125	Pass	
Chromium	S20-Se18667	CP	%	95			75-125	Pass	
Copper	S20-Se18667	CP	%	91			75-125	Pass	
Lead	S20-Se18667	CP	%	95			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	S20-Se18667	CP	%	103			75-125	Pass	
Nickel	S20-Se18667	CP	%	89			75-125	Pass	
Zinc	S20-Se18667	CP	%	80			75-125	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Se18043	NCP	%	107			70-130	Pass	
4.4'-DDD	S20-Se18043	NCP	%	123			70-130	Pass	
4.4'-DDE	S20-Se18043	NCP	%	109			70-130	Pass	
4.4'-DDT	S20-Se18043	NCP	%	75			70-130	Pass	
a-BHC	S20-Se18043	NCP	%	116			70-130	Pass	
Aldrin	S20-Se18043	NCP	%	120			70-130	Pass	
b-BHC	S20-Se18043	NCP	%	107			70-130	Pass	
d-BHC	S20-Se17846	NCP	%	113			70-130	Pass	
Dieldrin	S20-Se17846	NCP	%	91			70-130	Pass	
Endosulfan I	S20-Se18043	NCP	%	101			70-130	Pass	
Endosulfan II	S20-Se18043	NCP	%	97			70-130	Pass	
Endosulfan sulphate	S20-Se18043	NCP	%	97			70-130	Pass	
Endrin	S20-Se18043	NCP	%	113			70-130	Pass	
Endrin aldehyde	S20-Se18043	NCP	%	94			70-130	Pass	
Endrin ketone	S20-Se18043	NCP	%	92			70-130	Pass	
g-BHC (Lindane)	S20-Se18043	NCP	%	111			70-130	Pass	
Heptachlor	S20-Se18043	NCP	%	105			70-130	Pass	
Heptachlor epoxide	S20-Se18043	NCP	%	110			70-130	Pass	
Hexachlorobenzene	S20-Se18043	NCP	%	115			70-130	Pass	
Methoxychlor	S20-Se18043	NCP	%	74			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S20-Se13033	NCP	%	76			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Se19438	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Se19438	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Se19438	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Se19438	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Se19438	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Se19438	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Se20761	NCP	mg/kg	0.6	0.6	14	30%	Pass	
Fluorene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Naphthalene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Se20761	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Se20761	NCP	mg/kg	0.6	0.6	11	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Se18655	CP	mg/kg	4.4	3.4	25	30%	Pass	
Cadmium	S20-Se18655	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Se18655	CP	mg/kg	11	12	10	30%	Pass	
Copper	S20-Se18655	CP	mg/kg	25	25	1.0	30%	Pass	
Lead	S20-Se18655	CP	mg/kg	11	11	2.0	30%	Pass	
Mercury	S20-Se18655	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Se18655	CP	mg/kg	8.0	8.5	7.0	30%	Pass	
Zinc	S20-Se18655	CP	mg/kg	89	100	14	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Se18655	CP	%	5.6	5.3	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Se18665	CP	%	1.7	1.6	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Se18666	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S20-Se18666	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Se18666	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S20-Se18666	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S20-Se18666	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S20-Se18666	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Se18666	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S20-Se18666	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Se18671	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Se18671	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Se18671	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Se18671	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Se18671	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Se18671	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Se18671	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Se18671	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S20-Se18671	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Se18043	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Dieldrin	S20-Se18043	NCP	mg/kg	0.90	0.68	27	30%	Pass	
Endosulfan I	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-Se18043	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-Se18043	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S20-Se18043	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Se18043	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Se18043	NCP	mg/kg	< 0.5	< 0.5	<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
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	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.

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Appendix G – Calibration certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-113967**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	**Low**	**High**	**TWA**	**STEL**
	Settings	✓	50ppm	100ppm		
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		92ppm Isobutylene	NATA	SY245		91.6ppm

Calibrated by: **Michelle Wagner**

Calibration date: **6/06/2020**

Next calibration due: **3/12/2020**

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-111087**

airmet

Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		92ppm Isobutylene	NATA	SY245		91.5ppm

Calibrated by: **Jay Marosa**

Calibration date: **3/09/2020**

Next calibration due: **2/03/2021**

Appendix H – Photograph log

Investigation 10th June 2020	
Photograph 1: Northern portion of investigation area adjacent Belmont WWTW boundary.	**Photograph 2:** Central portion of investigation area.
Photograph 3: Eastern portion of investigation area adjacent sand dunes.	**Photograph 4:** Southern portion of investigation area
Photograph 5: General fill material observed during investigation	**Photograph 6:** General natural material observed during the investigation

Investigation 8th and 9th of September 2020	
Photograph 7: Waste storage area in south western corner of Belmont WWTW site	**Photograph 8:** Southern portion of Belmont WWTW; waste storage bins observed.
Photograph 9: Dense vegetation observed in southern portion of investigation area	**Photograph 10:** South eastern portion of proposed Belmont Desalination plant area.
Photograph 11: Eastern portion of investigation area inside Belmont WWTW	**Photograph 12:** Northern portion of investigation area in side Belmont WWTW

Photograph 13: General fill material observed at the site 	**Photograph 14:** Natural material observed at the site

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	A. Brajlih E. Griffin	A. Monkley		N. Malcolm		23/10/2020

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