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Report on
Detailed Site Investigation for Contamination

Sydney Children's Hospital Stage 1 and Children's Comprehensive Cancer Centre (SCH 1 / CCCC)
High Street and Hospital Road, Randwick

Prepared for
LendLease Building Pty Limited on behalf of
Health Infrastructure

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

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Executive Summary

This report presents the results of a Detailed Site Investigation undertaken for the proposed Sydney Children's Hospital Stage 1 and Children's Comprehensive Cancer Centre (SCH 1 / CCCC) located within the larger Randwick Campus Redevelopment (RCR) project, located at Botany Street, High Street and Hospital Road, Randwick.

The investigation comprised a review of previous investigations within the larger RCR development (including the current site), in addition to an intrusive soil and groundwater sampling investigation targeting data gaps (following previous investigations) and measuring the potential impacts of the ongoing construction activities in areas previously assessed.

The previous preliminary site investigation (PSI) identified potential areas of environmental concern (AEC) as follows:

- Imported fill;
- Demolition of dwellings containing asbestos and / or lead paint;
- Construction support activities;
- Explosives associated with former air raid shelter(s) ('zig zag' slit trenches) noted on 1943 historical aerial imagery along Hospital Road; and
- Neighbouring or nearby commercial activities including the operational hospital, former butcher / medical practice / orthodontist and an EPA notified dry cleaning business located 300 m to the north-east.

Previous investigations detected slightly elevated levels of metals in groundwater, however, these were considered to be indicative of regional urban groundwater quality, rather than an off- or on-site contamination source. Previous soil results indicated elevated levels of metals and polycyclic aromatic hydrocarbons (i.e., as benzo(a)pyrene) broadly spread across the site in fill, and localised exceedances of carcinogenic polycyclic aromatic hydrocarbons at three locations and polychlorinated biphenyls at one test location within the site. Exceedances of environmental based criteria for select metals and benzo(a)pyrene were not deemed to be a significant risk for the hospital land use.

Further exceedances were noted within roadbase materials in the footprint of the former Eurimbla Avenue for metals, polycyclic aromatic hydrocarbons and petroleum hydrocarbons, however, these were previously managed through disposal under a resource recovery order. Asbestos in soil (as bonded cement products) was noted throughout the larger RCR area, largely attributable to the previous residential dwellings which had been demolished, with the impacts mostly localised to shallower fill (i.e., <500 mm deep).

Contamination identified within the Stage 1 Randwick Campus Redevelopment (including a stormwater easement in Stage 2) was previously remediated and validated to be suitable for the proposed development, which comprises part of the current SCH / CCCC development.

The current intrusive investigation noted similar results to previous investigations with exceedances of environmental based criteria for select metals and benzo(a)pyrene, in addition to exceedances of health-based criteria for carcinogenic polycyclic aromatic hydrocarbons at two locations. Asbestos was also detected at one test location, and potentially exists in other parts of the site. Groundwater results

indicated similar minor elevated levels of metals associated with regional water quality, in addition to minor detections of benzo(a)pyrene, likely associated with the nearby elevated levels present in soil.

Based upon the results presented within this report it is considered that there is a low to medium risk of contamination at the site, primarily related to existing fill and the (potential) presence of asbestos and PAH. It is therefore recommended to develop a Remediation Action Plan (RAP) to address contamination at the site. The RAP will provide strategies for:

- Assessing the data available to determine areas of environmental concern (AEC) requiring remediation;
- Remediation of the AEC;
- Management of waste including asbestos impacts in soil and roadbase materials;
- Management of excavations and tracking of soil movement within the site and off site;
- Management of imported materials;
- Asbestos and unexpected finds management; and
- Further testing (including validation of identified contamination) as required.

It is considered that following a successful RAP implementation the site will be rendered suitable for the proposed development.

This report must be read in its entirety to inform any decision making or future planning.

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Report on Detailed Site Investigation for Contamination

Sydney Children's Hospital Stage 1 and Children's Comprehensive Cancer Centre (SCH 1 / CCCC)

High Street and Hospital Road, Randwick

1. Introduction

This report presents the results of a Detailed Site Investigation (DSI) for Contamination undertaken for the new Sydney Children's Hospital Stage 1 (SCH-1)/ Children's Comprehensive Cancer Centre (CCCC) development (the "site", as shown in Drawings 1 and 2, Appendix A), part of the larger Randwick Campus Redevelopment (RCR) located at High Street and Hospital Road, Randwick. The investigation was commissioned by Mark Elliott of LendLease Building Pty Ltd (LLB), on behalf of Health Infrastructure and was undertaken in accordance with the Douglas Partners Pty Ltd (DP) proposal SYD200851 dated 10 August 2020.

The purpose of this Report is to support the State Significant Development Application (SSDA) for the SCH-1 / CCCC development. This report responds to item 20 of the Secretary's Environmental Assessment Requirements (SEARs) issued 2 December 2020 for State Significant Development Application (SSDA) 10831778.

The investigation was carried out in consultation with LLB, PricewaterhouseCoopers (PwC), the project managers for Health Infrastructure (HI), and the civil / structural engineers Bonacci Group Pty Ltd (Bonacci).

It is understood that the larger RCR project comprises multiple stages (parts as shown in Drawing 1, Appendix A) which includes the current development of a new multi-storey Acute Services Building within Stage 1 (ASB) and Integrated Acute Services Building (IASB) addition located to the south of the current site, along Hospital Road, and the future planned Health Translation Hub (HTH) in the north west part of Stage 2.

It is noted that Hospital Road does not form part of the proposed development area and associated SSDA. The Hospital Road Lowering (HRL) of the northern part of Hospital Road, immediately to the east, is understood to be subject to a separate Planning Approval Pathway and does not form part of this development application. Nonetheless this area has been included in the current investigation as being indicative of nearby contamination risks which may be relevant to the SCH-1 / CCCC development area.

DP has previously completed a Preliminary Site Investigation (PSI) (DP, 2018) and DSI for the Stage 1 and Stage 2 RCR areas (DP, 2019a) which established the basis of the recommendations of a Remediation Action Plan (RAP) (DP, 2019b), and subsequent site validation report (DP, 2019c) for the Stage 1 ASB development. A supplementary DSI was undertaken for the IASB addition (DP, 2019d) which informed a revision to the RAP (DP, 2019b). More recently a PSI was completed for the proposed SCH-1 / CCCC development area (DP, 2020a) which comprised a summary of previous relevant desktop information for the larger RCR area and supplementary information, as pertaining to the current site boundary.

It is noted that, with the integration of the proposed new building with the ASB and IASB buildings (also under development) there is a consequential overlap of the "site" boundary with the ASB and IASB boundaries as established in previous reports mentioned above. These overlaps are shown on Drawings 1 and 2 in Appendix A. The contamination status assessment with relevance to these overlaps is discussed where appropriate within this report.

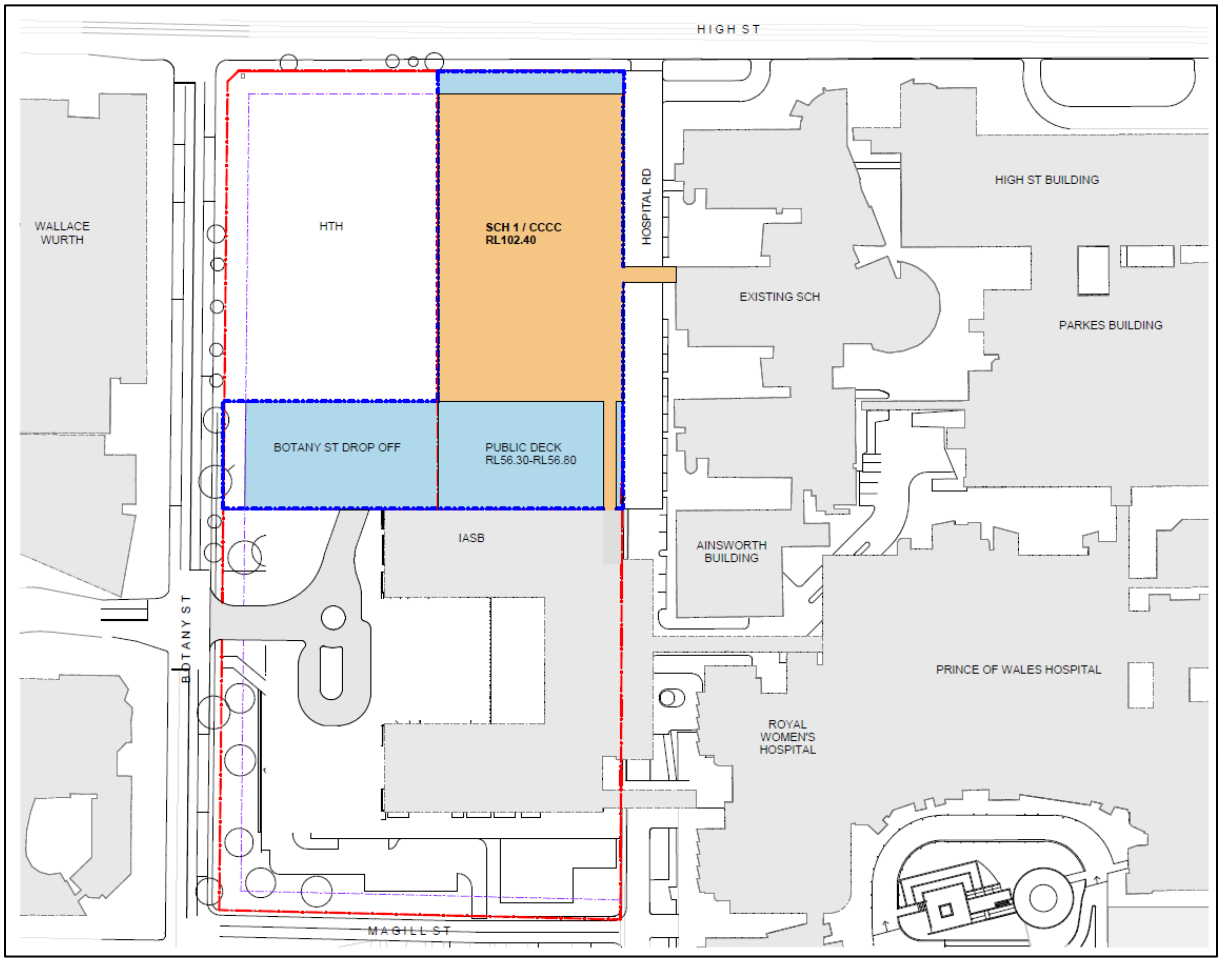
The objective of this DSI is to assess the suitability of the site, from a contamination perspective, for the proposed development (refer Section 2) and to comment on the need for further investigation and / or remediation or management (if required), such that the site can be stated to be suitable for the proposed development, from a contamination perspective. This investigation also provides a revised preliminary *in-situ* waste classification based on the previous and current soil testing results.

2. Proposed Development

The project scope includes construction and operation of a new 9 storey building plus 2 basement levels and a plant room to provide:

- A new Emergency Department;
- A new Intensive Care Unit;
- Short Stay Unit;
- Day and Inpatient CCCC oncology units;
- Children's Comprehensive Cancer Centre;
- Ambulance access, parking, back of house and loading dock services accessed via the lowered Hospital Road;
- Integration with the Prince of Wales Acute Services Building and Integrated Acute Services Building, both currently under construction;
- Integration with the proposed Health Translation Hub (HTH) which is a facility being developed by UNSW for education, training and research;
- Public domain and associated landscaping;
- Tree removal;
- Utilities services and amplification works; and
- Site preparation and Civil works.

The project is located on the corner of High Street and Hospital Road, Randwick. The figure below shows the project site plan.



3. Site Description

The site is located approximately 7 km south-east of the Sydney CBD (refer to locality on Drawing 1, Appendix A).

The site is located adjacent to the existing Randwick Hospital Campus (the Hospital, known as 61 High Street, Randwick), which encompasses multi-storey buildings, a number of car parks, and open space and courtyard areas. Buildings across the Hospital include the Sydney Children's Hospital and Ronald McDonald House, The Prince of Wales Public and Private Hospitals including patient wings, operating theatres and palliative care, and campus services such as staff residences, ambulance station, and childcare facilities. The hospital occupies a total area of approximately 13.5 hectares (ha).

Table 1 below presents site identification details.

Table 1: Site Identification

Item	Details
Allotment Identification	Lot 100, Deposited Plan 1249692 Lot 1, Deposited Plan 13995 Lot 2, Deposited Plan 13995 Lot 3, Deposited Plan 13995 Lot 4, Deposited Plan 13995 (Part lot) Lot A, Deposited Plan 304806 Lot B, Deposited Plan 304806 Lot C, Deposited Plan 304806 Lot D, Deposited Plan 304806 Lot A, Deposited Plan 303478 Lot B, Deposited Plan 303478 Lot A, Deposited Plan 102029 Lot B, Deposited Plan 102029 Lot 35, Deposited Plan 7745 Lot 1, Deposited Plan 12909 Lot 2, Deposited Plan 12909 Lot 12, Deposited Plan 12909 Lot 13, Deposited Plan 12909 Lot 14, Deposited Plan 12909 Lot A, Deposited Plan 441943 (Part lot) Lot B, Deposited Plan 441943 Lot 6, Deposited Plan 13997 (Part lot) Lot 7, Deposited Plan 13997 Lot A, Deposited Plan 167106 Lot B, Deposited Plan 167106 (Part lot) Lot 1, Deposited Plan 870720 (Part lot)
Street Address	Corner of High Street and Hospital Road, Randwick
Site Coordinates (centroid)	337057 m East, 6245592 m North (GDA 94 Zone 56)
Site Area	9870 m^2
Local Government Area	Randwick Council
Zoning	SP2 - Health Services Facilities (previous SP2 and residential)
Current Land-use	Public road, construction site compound
Proposed Land-use	Hospital Infrastructure

At the time of preparing this report, Hospital Road remained open for public access. The remainder of the site was being used as a construction site compound associated with the ASB and IASB construction works further south. The bulk of the site accommodated temporary site sheds, offices and amenities, whilst the remainder (outside Hospital Road) was used for materials and equipment storage, and limited construction staff parking. The general layout of the site is shown as the background aerial photograph on Drawing 1, Appendix A.

The land uses surrounding the site include:

- *North* - High Street, then residential and commercial properties;
- *East* - Randwick Hospital Campus;
- *South* - ASB and IASB development areas; and
- *West* - HTH future development site, Botany Street, then UNSW.

4. Scope of Works

The scope of works for the DSI comprised:

- Review and summary of DP (2020);
- Review and summarise relevant intrusive investigations previously completed within and nearby the site as a part of the larger RCR development;
- Set out, levelling and scanning for buried services in areas of additional intrusive investigations;
- Drilling of eight boreholes using a combination of non-destructive drilling (NDD) and hand tools to depths of up to 1.9 m below ground level (bgl), continued with a track mounted drilling rig using a combination of solid flight augers, rotary drilling and coring, continuing to depths of 17.5 m bgl into sandstone bedrock for geotechnical purposes;
- Collection of samples from the boreholes at regular intervals or upon signs of contamination (e.g., staining or odours) extending a minimum of 0.5 m into natural soils;
- Collection of additional samples from four NDD excavations completed by Christie Civil within the northern part of Hospital Road at regular intervals or upon signs of contamination using hand tools, extending into natural soils or refusal due to exposed services or encountering bedrock;
- Field testing of selected recovered soil samples using a photo-ionisation detector (PID) to screen for volatile organic compound (VOC);
- Dispatch of selected soil samples and quality control samples to a NATA accredited laboratory for a range of contaminants previously identified in a Conceptual Site Model (CSM) including:
  - Metals / metalloids (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn);
  - Total recoverable hydrocarbons (TRH);
  - Benzene, toluene, ethylbenzene and xylenes (BTEX);
  - Polycyclic aromatic hydrocarbons (PAH);
  - Organochlorine pesticides (OCP);
  - Organophosphorus pesticides (OPP);
  - Polychlorinated biphenyls (PCB);

  - Phenols;
  - Asbestos (presence / absence in soil);
  - Volatile organic compounds (VOC);
  - Explosives; and
  - Ammonia.
- Installation of groundwater monitoring wells at four of the completed boreholes;
- Development, measurement of groundwater levels and sampling from two groundwater monitoring wells, including one previously installed within the RCR area;
- Dispatch of two groundwater samples and quality control samples to a NATA accredited laboratory for a range of contaminants previously identified in a CSM including:
  - Metals / metalloids (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn);
  - TRH;
  - BTEX;
  - PAH;
  - OCP;
  - OPP;
  - PCB;
  - VOC; and
  - Phenols.
- Preparation of this report.

5. Site History Summary

DP (2020a) comprised a review of previous desktop and intrusive investigations within the larger RCR development area. Historical information indicated that the majority of the site has been occupied with residential dwellings, with other parts comprising roads (Eurimbla Avenue and Hospital Road) and limited low-density commercial operations (i.e., mixed-commercial stores) since at least 1930. Nearby land-uses have been predominately residential, with the progressive upgrading / expansion of the Prince of Wales hospital to the east, and the University of New South Wales to the west, further limited medical land-uses were noted (i.e., dental / general practice) near the site.

More recently, the residential dwellings along Eurimbla Avenue have been demolished within the greater RCR development. The site has then largely been used as a construction site compound (i.e., site sheds and storage) in support of the construction works within ASB and IASB.

Potential areas of environmental concern (AEC) identified through the site history review, walkover, and review of previous investigations included:

- Imported fill;
- Demolition of dwellings containing asbestos and / or lead paint;
- Construction support activities;

- Explosives associated with former air raid shelter(s) ('zig zag' slit trenches) noted on 1943 historical aerial imagery along Hospital Road; and
- Neighbouring or nearby commercial activities including the operational hospital, former butcher / medical practice / orthodontist and an EPA notified dry cleaning business located 300 m to the north-east.

6. Previous Investigations

Results of the previous investigations relevant to the current site are summarised in the attached Tables C1 (soil), C2 (groundwater) and C3 (preliminary waste classification), Appendix C. The following section provides a summary of the overall results of the relevant investigations. All previous test locations, as reported in DP (2018), DP (2019a) and DP (2019d), are shown in the attached Drawing 3 (Appendix A), whilst Drawing 4 (Appendix A) shows test locations only relevant to the current site boundary.

6.1 Stage 1 and 2 RCR PSI (DP, 2018)

DP (2018) comprised a review of available desktop information in addition to a limited intrusive investigation comprising soil and groundwater sampling and testing from 31 boreholes (BH 1 to BH 9, BH 101 to BH 122).

6.1.1 Soil

Results of the limited soil testing indicated exceedances of environmental based limits for benzo(a)pyrene (BaP), nickel, copper and zinc. For the test locations within the current site this comprised:

- Copper in BH112/0-0.2 (110 mg/kg) which exceeded the EIL for residential/open space (65 mg/kg);
- Nickel in BH3/0.1-0.2 at 79 mg/kg and BH110/0-0.2 at 26 mg/kg which exceeded the EIL for commercial industrial *(10 mg/kg)* and residential/open space (*9 mg/kg);* and
- B(a)P exceeding the ESL in samples, BH109/0-0.2, BH110/0-0.2, BH113/0.5-0.7 and BH114/0.4-0.7.

Additional exceedances were noted in roadbase samples located beneath Eurimbla Avenue (refer Drawing 1, Appendix A for previous location of Eurimbla Avenue), including environmental exceedances for copper, TRH (fractions C_{10}-C_{16} and C_{16}-C_{34}), B(a)P in addition to exceedances of health based criterial (HIL) for B(a)P TEQ and TRH (fraction C_{16}-C_{34} - naphthalene, for vapour intrusion BH8). In relation to the current site, this comprised:

- Copper - 100 mg/kg in BH4 exceeded EILs for commercial / industrial *(80 mg/kg)* and residential / open space (*65 mg/kg);*
- TRH C16-C34 - 6600 mg/kg in BH4 exceeded ESLs for urban residential *(300 mg/kg)* and industrial / commercial *(1700 mg/kg)* and management limits *(10000 mg/kg)*;

- TRH F2-naphthalene - 170 mg/kg in BH4 and 1600 Res A/B Soil HSL for vapour intrusion and ESLs for Urban Res, Coarse Soil *(120 mg/kg);*
- Benzo(a)pyrene - 57 mg/kg in BH4 exceeded ESLs for urban residential *(0.7 mg/kg)* and industrial / commercial *(1.4 mg/kg)*; and
- Carcinogenic PAH - 77 mg/kg in BH4 and 8.2 mg/kg BH111 exceeded HIL B *(4 mg/kg)*, HIL C *(3 mg/kg)* and HIL D *(40 mg/kg* for BH4*)*.

Bonded asbestos was noted at one location (Stage 2 area, BH106), outside the current site boundary.

6.1.2 Groundwater

No signs of contamination concern were noted during groundwater well development or sampling from Bore BH7 (outside the current site). No phase separated hydrocarbons (PSH) were observed or detected by the interface meter.

Concentrations of PAH, TRH/BTEX, VOC, OCP, OPP, PCB, phenols were either below detection or within the adopted groundwater investigation levels (GIL) with the exception of copper and zinc, which were considered to be typical of groundwater conditions in urban settings, rather than a specific off or on-site contamination source.

6.1.3 Preliminary Waste Classification

Based on the results, the filling encountered in the bores at the RCR development site was preliminarily classified for off-site disposal purposes as General Solid Waste (non-putrescible), with the exception of the roadbase material and exceedances at BH3 (nickel) within the current site and BH106 (asbestos) outside the current site.

6.2 Stage 1 and 2 RCR DSI (DP, 2019a)

DP (2019a) comprised a review of the DP (2018) PSI previously completed for the Stage 1 and 2 RCR areas, in addition to further soil and groundwater testing. The DSI comprised work in stages, pre- and post-demolition of the residential properties, including:

- Fifteen boreholes (BH201-215) using hand tools and a drilling rig at two locations (BH202 and BH204) to facilitate the installation of groundwater monitoring wells;
- Excavation of 11 test pits (TP1-11) pre-demolition;
- Sampling groundwater from seven wells (BH202, BH204, BH10, BH11, BH14, BH16 and BH17) across two sampling events;
- Excavation ten test pits along the former Eurimbla Avenue (EA1 - EA10), to assess against the Recovered Aggregate Order (NSW EPA, 2014); and
- Excavation of twenty-six test pits post-demolition TP301-304, 305A-310A, and TP314-329) targeting the footprints of the demolished residential buildings.

6.2.1 Soil

Results of the limited soil testing indicated exceedances of environmental-based limits for benzo(a)pyrene (BaP), nickel, copper and zinc and health-based exceedances for PCB, PAH and asbestos. For the test locations within the current site this comprised:

- Zinc in BH213/0.1-0.2 (300 mg/kg) which exceeded the EIL for residential/open space (240 mg/kg);
- PCB in BH206 (1.6 mg/kg) which exceeded the HIL B (1 mg/kg);
- Carcinogenic PAH at TP302/0.5-0.6 (6.3 mg/kg) which exceeded HIL B (4 mg/kg); and
- B(a)P in samples TP302/0.5-0.6, TP318/0.0-0.2, BH202/0.3-0.4, , BH206/0.3-0.4, BH207/0.1-0.2, BH209/0.1-0.2 and BH210/0.2-0.3 exceeding the ESL for B(a)P (urban residential, 0.7 mg/kg).

Overall, the soils results indicated exceedances of health and ecological criteria (predominantly ecological) for PAH (in particular B(a)P). Statistical analysis was performed for all results and the various 95% UCL of the mean concentrations were within the health-based criteria defined for the site. 95% UCL mean concentrations for fill from the 0-0.3 m depth range and fill between 0.3 m and top of natural soil (excluding roadbase and asphalt) also exceeded the ESL guideline for urban residential (0.7 mg/kg).

Exceedances were also noted for total recoverable hydrocarbons, PAH and naphthalene in road-base materials beneath Eurimbla Avenue, these materials however, were found to be suitable for re-use under the Recovered Aggregate Order (NSW EPA, 2014).

6.2.2 Asbestos

Individual suspected asbestos containing material (ACM) fragments were located in BH106, TP305, 307, 310, 315, 318, 319, 323, 326, 329, and TP10 in the depth range of 0 - 0.2 m during either excavation/drilling or during field screening of recovered bulk samples through a 7 mm sieve. ACM was observed in slightly deeper fill in TP9 and TP319 at a depth of 0.4 - 0.5 m. Select recovered potential ACM fragments and additional 500 ml soil samples from each of the locations were sent to the laboratory for analysis for ACM and Asbestos Fines (AF) and Fibrous Asbestos (FA). Chrysotile asbestos was confirmed in laboratory testing to be present in the material collected from BH106, whilst chrysotile, amosite and crocidolite were detected in the fragments collected from TP9 and TP10. It is noted that potential ACM recovered from the 300 series test pits during field screening was assumed to contain asbestos based on previous results and similar materials encountered. Of these, test locations TP318 and TP329 were positioned within the current site boundary.

Surficial ACM was observed at multiple locations in between test locations on the ground surface. Relative to the current site boundary this included to the south of TP329 (around TP1), to the west and north-west of TP318. Refer to Drawing 5 for the location of previous asbestos finds relative to the current site.

6.2.3 Groundwater

Groundwater results indicated only elevated levels of heavy metals above the groundwater investigation levels (GIL), however, these were considered to be indicative of the regional groundwater quality in urban settings rather than an off- or on-site contamination source.

Groundwater depths were measured from 3.56 m to 5.96 m bgl across the RCR development area. Based on the measured groundwater depths a flow direction to the west and south west was inferred.

No further groundwater investigations were recommended for the Stage 1 and 2 areas.

6.2.4 Preliminary Waste Classification

Based on the results of the DSI and previous PSI, the filling encountered at the site was preliminarily classified for off-site disposal purposes as General Solid Waste (non-putrescible), with the exception of:

- Asphalt and roadbase from Eurimbla Avenue which was assessed to be suitable under the Recovered Aggregate Order (NSW EPA, 2014); and
- Fill the vicinity of TP318 and TP329 (and on the surface to the south of TP329, near TP1) which were confirmed or suspected to contain asbestos, which was to be preliminarily classified as General Solid Waste (non-putrescible) - Special Waste (asbestos).

6.3 Subsurface Profile

The subsurface profile encountered in the bores and test pits across the Stage 1 and Stage 2 RCR areas have been previously summarised as below:

- **PAVEMENT / SLAB:** A 30 - 70 mm thick asphaltic concrete surfacing overlying roadbase gravel to depths of up to 0.4 m was encountered in within roadways. Brick pavement or concrete pavers / slab up to 0.1 m thick were observed in and nearby previous residential properties;
- **FILLING:** (topsoil): Dark brown, fine to medium slightly silty sand topsoil was encountered to depths of 0.05 - 0.3 m; Some locations contained sandstone boulders, terracotta, glass, brick fragments and some slag and tile fragments;
- **FILLING:** Sandy filling with fine to medium gravel to depths of between 0.2 m and 1.4 m. Sandy filling and / or ripped sandstone was encountered into depths of between 0.2 m and 2.3 m. Trace of charcoal, clinker / slag was observed in BH201, BH213 and TP10, and anthropogenic material including brick, terracotta and glass fragments, metal sheeting, and asphaltic gravels were noted in in the majority of test locations;
- **SAND / Clayey SAND:** At the majority of test locations fine to medium sand, ranging from yellow to grey-brown in colour, was encountered in all boreholes and test pits. Clayey sand was encountered in BH117 and BH118 at depths of 1.4 m and 1.0 m respectively. Dense clayey sand (BH6, 5.5 m and clay (BH9, 5.2 m) was noted at two locations. Trace quantities of charcoal was observed at BH207 and BH208; and
- **BEDROCK:** In boreholes BH1 to BH9, the top of bedrock ranged between depths of 1.5 m (RL 53.1 m) and 6.9 m (RL 40.7 m). Very low to low strength sandstone was encountered in BH202 and BH204 at depths of 3.0 m and 4.7 m, respectively.

6.4 IASB Addition DSI (DP, 2019d)

DP (2019d) comprised a review of historical information and testing targeted in the area adjoining the Stage 1 and 2 RCR development area (refer Drawing 1, Appendix A) for the proposed IASB addition which was to include lowering of part of Hospital Road in addition to connections / modifications within the ASB site to connect to the adjoining Prince of Wales Hospital to the east. The intrusive investigation comprised seven test pits (TP401 to TP407) conducted within Hospital Road and sealed surfaces within the Prince of Wales Hospital to the east. No further groundwater testing was conducted based upon previous recommendations of the Stage 1 & 2 RCR DSI (DP, 2019a).

6.4.1 Soil

Analytical results indicated concentrations of BTEX, phenols, OCP, OPP, PCB and light fraction TRH below laboratory limits of reporting (LOR) for all soil samples. Metal concentrations were either less than the LOR and / or less than the adopted site assessment criteria (SAC) for all samples tested.

The exceedance of health-based investigation levels (Residential B) for carcinogenic PAH and exceedances of the ESL for B(a)P and TRH (C_{16}-C_{34}) were noted in the roadbase samples at TP401 and TP402.

Chrysotile, amosite and crocidolite asbestos was detected in the roadbase sample from TP402/0.2-0.25 and AF/FA results were 0.0328% w/w which exceeded the HSL (B) of 0.001% w/w. The asbestos was considered to be associated with building rubble in roadbase at this location. No further asbestos was detected in delineation samples or at other test locations. Refer to Drawing 5, Appendix A for previous asbestos finds within the Stage 2 RCR development area (near the current site boundary).

Results for selected explosive analytes were below detected in all samples analysed. Ammonia was above detection in one sample (TP407/0.35) however, the level did not exceed the screening level adopted for the site (50 mg/kg).

6.4.2 Preliminary Waste Classification

The filling encountered in the test pits at the site was preliminarily classified for off-site disposal purposes as General Solid Waste (non-putrescible), with the exception roadbase in the vicinity of TP402 which was confirmed to contain asbestos, this material or any other impacted fill was to be classified at a minimum as Special Waste (asbestos).

It is noted whilst there were exceedances of CT1 and CT2 for lead and B(a)P, associated with primarily roadbase materials, that additional toxicity characteristic leaching procedure (TCLP) tests resulted in combined concentrations within CT1 and TCLP1 respectively.

6.4.3 Subsurface Profile

The subsurface profile beneath Hospital Road (south of the current site) and its verges were previously summarised as:

- **PAVEMENT / SLAB:** A 30 - 70 mm thick asphaltic concrete surfacing; overlying;
- **FILL (ROADBASE):** Dark brown medium grained sand with fine to coarse igneous gravel and medium grained sandstone gravel from 0.2-0.45 m. In test pits TP401, TP405 and TP406 fill (roadbase) was encountered directly above natural sand. No roadbase was encountered in TP407;
- **FILL:** Yellow fine to medium grained sand with fine to coarse sandstone gravel and igneous gravel with plastic, crushed cement, crushed brick to depths of between 0.45 and 0.95 m depth. A hydrocarbon odour was noted in TP402. Trace ash and charcoal were noted in TP407 at 0.35-0.4 m depth. At a depth below 0.55 m in TP407, large sandstone cobbles were observed with cement gravel inclusions;
- **SAND:** Variably yellow, orange and white fine to medium sand with some fine to coarse sandstone gravel; some roots and organic staining were noted in TP405; and
- **BEDROCK:** Sandstone encountered in TP401 at 0.7 m depth and at depths of between 3.4 m and 6 m in BH1, BH2, BH10 and BH11.

6.5 Remediation Action Plan (DP, 2019b)

DP (2019b) was prepared for the ASB (Stage 1) and IASB development areas only, and was the culmination of multiple revisions from additional works including the post-demolition sampling in DP (2019a) and the IASB addition investigation (DP, 2019d). The RAP outlined strategies for managing and remediating identified contamination, which primarily comprised asbestos in soils and PAH, in order to render the ASB and IASB areas suitable for the proposed hospital development. The remediation strategy was primarily to comprise of the removal of soils exceeding health-based criteria, on-site management of minor ecological exceedances and the removal of asphalt and roadbase material to be recycled as recovered aggregate (NSW EPA, 2014) and / or disposed off-site under an assigned waste classification.

6.6 Stage 1 Validation Report (DP, 2019c)

The Stage 1 validation report was prepared for the ASB development area and comprised a review of information related to remediation works conducted within the Stage 1 area (and part of a stormwater easement within Stage 2) as informed by the RAP (DP, 2019b). It was concluded that the remediation works had successfully removed any identified contamination and rendered the Stage 1 area suitable for the proposed hospital development. This report was subject to an external site audit by a NSW Environment Protection Authority (EPA) accredited Site Auditor under the *Contaminated Land Management Act 1997*. An associated Site Audit Statement (SAS) and Site Audit Report (SAR) was provided to meet the planning consent under State Significant Development (SSD-9113) and Randwick City Council Development Approval (DA/208/2018).

It is noted however, that this report did not include other areas of the greater RCR development footprint including the IASB addition boundary and the Stage 2 area. Parts of the southern (within Stage 1) and northern extents (within the Stage 2 stormwater easement) of the current site boundary are within the boundary of this validation report and associated SAR / SAS, as shown on Drawing 2, Appendix A.

It is also noted that of the test locations within the current site boundary, reported with exceedances of the adopted SAC (Section 6.2 and 6.3 above) only test locations BH112, BH113, and BH114 were subject to remediation and validation under DP (2019c).

6.7 Stage 2 *In-Situ* Waste Classification Assessment (DP, 2019e)

The Stage 2 *In-Situ* waste classification assessment was undertaken following completion of the Stage 1 validation works which was undertaken in order to assist with providing an updated assessment of the soils to facilitate off-site disposal of the remaining fill within the area. The investigation comprised a review previous results and twenty-eight additional test pits (refer Drawing 3, Appendix A) which were positioned to assess any potential impacts and changes in the site conditions since the DSI investigation from ongoing construction and earthworks activities, with an emphasis on previously identified contaminants i.e., metals, PAH and asbestos. The investigation did not include the north eastern part of Stage 2 which was occupied by the site sheds or the stormwater easement which was validated during the Stage 1 works.

The results of the investigation indicated minor detection of metals within multiple locations exceeding the currently adopted EILs (refer Section 9 & Appendix F) for nickel, and one location for zinc. Minor detection of benzo(a)pyrene was also noted, which is above the current ESL (refer Section 9 & Appendix F) at four locations. These results, however, are considered to be similar to the previous results. Minor detection of OCP as aldrin and dieldrin was noted at three test locations, with one location above 2 mg/kg, however, these concentrations are within the HIL (10 mg/kg) (refer Section 9 & Appendix F).

No asbestos was detected by the laboratory from samples recovered within the test pits, however, surficial asbestos was observed within the “Tear Drop” shaped area at four locations.

Based on the results an *in-situ* waste classification was provided consisting of:

- General Solid Waste (non-putrescible) - Special Waste (asbestos) for the “Tear Drop” shaped area and previously identified asbestos as shown on Drawing 5, Appendix A; and
- General Solid Waste (non-putrescible) for the remainder of Stage 2 (excluding areas under the site sheds and the stormwater easement).

6.8 “Tear Drop” Area Assessment (DP, 2020b)

DP (2020b) comprised an assessment of a small area surrounding TP319 and TP318 (refer Drawing 5, Appendix A) within the Stage 2 RCR development area in which asbestos contamination had previously been identified (both in ground and on the surface), but not remediated under the validation works (DP, 2019c). The assessment of the area (referred to as the tear drop based on the shape) was commissioned by Lend Lease Building Pty Limited (LL) to assess the suitability for temporary use as a

storage area in relation to the construction of the ASB in Stage 1 of the RCR project. As shown on Drawing 5, Appendix A, the southern and eastern parts of the tear drop fall within the current site.

In response to DP (2019a) LL arranged to have the upper 200 - 300 mm of soils (localised up to 500 mm) stripped from the "tear drop" area and disposed to landfill as Special Waste (Asbestos). Following the strip, DP conducted a surface clearance and then a geotextile fabric was laid and verified spoil material from piling works within Stage 1 RCR was used to backfill to current surface levels.

The report concluded that the area was suitable, following excavation, clearances and backfilling to be used as a storage area for the Stage 1 RCR construction works. As with the remainder of Stage 2, the "tear drop' area was also reported to be subject to further investigation, remediation and validation before being declared suitable, from a contamination standpoint, for any other future long-term land use.

7. Preliminary Conceptual Site Model

A Conceptual Site Model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or in the future i.e., it enables an assessment of the potential source - pathway - receptor linkages (complete pathways).

7.1 Known and Potential Contamination Sources and Contaminants of Concern

Based on the findings of DP (2019a) & (2019d), the current PSI (DP, 2020a) potential sources of contamination and associated contaminants of concern have been identified in Table 2. Table 3 outlines in general the location, depth and type of contaminants identified during previous investigations within the current site; refer to Sections 11 & 12 for a summary of these results in relation to the adopted SAC and their significance.

Table 2: Previously Identified Contamination

Location	Depth Range(s)	Contaminants
S2-TP1	0-0.2	Nickel
S2-TP2	0-0.2	Nickel
S2-TP5	0.4-0.6	Nickel B(a)P
S2-TP6	0-0.2, 0.9-1.0	Nickel B(a)P
S2-TP8	0-0.2, 0.8-1.0	Nickel
S2-TP12	0-0.2, 0.8-1.0	Nickel B(a)P Aldrin + Dieldrin
S2-TP13	0.5-0.7	Nickel

Location	Depth Range(s)	Contaminants
S2-TP19	0.2	Nickel
S2-TP19	0.4-0.6	Nickel
S2-TP20	0.3-0.5	Nickel
S2-TP21	0-0.2	Nickel
S2-TP21	0.3-0.5	Nickel
S2-TP22	0-0.2, 0.3-0.5	Nickel
S2-TP23	0-0.2, 0.3-0.5, 0.8-1.0	Nickel
S2-TP24	0-0.2, 0.5-0.7	Nickel
S2-TP25	0-0.2, 0.3-0.5	Nickel
S2-TP26	0-0.2	Nickel
TP302/	0.5-0.6	B(a)P B(a)P TEQ
TP309A	0-0.2	B(a)P
TP317	0-0.2	B(a)P
TP318	0-0.2	B(a)P Asbestos
TP318	0.4-0.5	B(a)P
TP328	0-0.2	B(a)P)
TP329	0.1-0.2	Asbestos
BH206	0.3-0.4	B(a)P PCB
BH207	0.1-0.2	B(a)P
BH209	0.1-0.2	B(a)P
BH210	0.2-0.3	B(a)P
BH213	0.1-0.2	Zinc
TP4	0.4-0.5	B(a)P
BH3	0.1-.0.2	Nickel
BH4	0.07-0.15 (roadbase)	Copper TRH B(a)P B(a)P TEQ
BH109	0-0.2	B(a)P
BH110	0-0.2	Nickel B(a)P
BH111	0-0.2	Zinc B(a)P B(a)P TEQ)

Location	Depth Range(s)	Contaminants
BH112	0-0.2	Copper
BH113	0.5-0.7	B(a)P

Table 3: Potential Additional Contamination Sources and Contaminants of Concern

Potential Source	Description of Potential Contaminating Activity	Contaminants of Concern
Imported fill of unknown origin (S1)	Filling: Associated with disturbed terrain in the local area and from building of roads and demolition of structures. Previous investigations have identified an average fill thickness of about 0.5 m across the RCR development.	Heavy metals, TPH, BTEX, PAH, phenols, PCB, OCP, and asbestos. Previous investigations have identified the presence of the above contaminants to varying degrees, with the exception of most metals, BTEX, OCP and phenols. Exceedances of SAC are shown on Table 2.
Previous site structures (S2)	The majority of the site was previously occupied by residential structures, some of which were confirmed to have hazardous building materials including asbestos and lead based paint. The former Eurimbla Avenue, which passes through the site boundary, contained asphalt and roadbase.	Lead, asbestos, PCB, PAH, TRH, BTEX. Previous investigations have identified the presence of the above contaminants to varying degrees, with the exception of most metals, BTEX, OCP and phenols. Exceedances of SAC are shown on Table 2.
Construction activities (S3)	The site has largely been used for the storage of materials and equipment associated with construction activities in the neighbouring ASB and IASB areas. There is a low potential for impacts from stockpiling and equipment maintenance.	Heavy metals, TRH, BTEX, PAH, asbestos.
Industrial / commercial activities, neighbouring and nearby (S4)	Operation of hospital. Storage of chemicals or equipment associated with former butcher / medical practices and orthodontist. Explosives associated with possible former air raid shelter shown on 1941 aerial photograph. EPA notified dry cleaning business to the north-east.	Heavy metals, TRH, BTEX, PAH, phenols, VOC, ammonia and asbestos.

The potential contamination sources (S) on the site, in addition to the known locations of contamination (Table 2) are therefore as follows:

- S1: Fill of unknown origin;
- S2: Previous site structures;
- S3: Construction activities; and
- S4: Industrial / commercial activities, neighbouring and nearby.

7.2 Potential Receptors

7.2.1 Human Health Receptors

R1 Current site users (site workers (deliveries), pedestrians, road users);

R2 Construction and maintenance workers;

R3 Final end users (health workers and visitors); and

R4 Land users in adjacent areas (university / hospital / residential / commercial).

7.2.2 Environmental Receptors

R5 Groundwater;

R6 Surface water (Botany Bay); and

R7 Terrestrial ecosystems (neighbouring areas of conservations such as Centennial Park, Queens Park and Eastlakes).

7.2.3 Potential Pathways

Potential pathways for the identified contamination to impact on the receptors include the following:

P1 Ingestion and dermal contact;

P2 Inhalation of dust and/or vapour;

P3 Leaching of contaminants and vertical migration into groundwater (Eastlakes / Botany Bay);

P4 Surface water run-off (Centennial Park / Coogee);

P5 Lateral migration of groundwater; and

P6 Contact with terrestrial ecology (Centennial Park).

7.3 Summary of Preliminary CSM

A ‘source - pathway - receptor’ approach has been used to assess the potential risks of harm being caused to human, water or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways. The possible pathways between the above potential sources (S1 to S4) and receptors (R1 to R7) are provided in Table 4 below.

Table 4: Potential Complete Pathways

Source	Pathway	Receptor
S1 Fill of unknown origin S2 Previous structures on-site S3 Construction Activities	P1: Ingestion and dermal contact	R1: Current site users R2: Construction and maintenance workers R3: Final end users
	P2: Inhalation of dust and/or vapour	R1: Current site users R2: Construction and maintenance workers R3: Final end users (educational / hospital) R4: Land users in adjacent areas (educational / hospital / residential / commercial / industrial)
	P3: Leaching of contaminants and vertical migration into groundwater	R5: Groundwater
	P4: Surface water run-off P5: Lateral migration of groundwater	R6: Surface water
	P6: Contact with terrestrial ecology	R7: Terrestrial ecology
S4 Neighbouring sites	P2: Inhalation of vapour generated by contaminated groundwater.	R1: Current site users R2: Construction and maintenance workers R3: Final end users R4: Land users in adjacent areas
	P3: Lateral migration of contaminated groundwater from up-gradient sites	R5: Groundwater R6: Surface water
	P6: Contact with terrestrial ecology	R7: Terrestrial ecology

8. Field Work

8.1 Sample Location and Rationale

The current site comprises an area of approximately 12,420 m^2, which corresponds to a recommended sampling density (NSW EPA, 1995) of approximately 23 regularly placed sampling locations. Previous investigations have included 35 test locations within 10 m of the current site boundary, noting that eight locations are outside the boundary, but are considered indicative of nearby conditions in the absence of a surveyed site boundary.

As noted in Table 3, previous intrusive investigation locations have largely targeted the potential contamination sources S1 and S2. Accordingly, the current investigation has focused on existing data gaps, namely test locations within Hospital Road (S1 to S4) and opportunistic sampling within the Stage 2 area (as part of a geotechnical investigation) to assess any potential impacts ongoing construction works may have had on the site conditions (S3), and therefore, the validity of previous results.

Field investigations were undertaken between 19 to 31 August (boreholes) and 2 to 7 September 2020 (Cherrie Civil test pits) undertaken under the supervision of DP environmental and geotechnical engineers.

The field work for the boreholes comprised the drilling of eight boreholes (BH601 to BH608) drilled to a minimum depth of 0.5 m into natural soils or prior refusal using a combination of NDD, hand tools and a track mounted drilling rig. Groundwater monitoring wells were installed at BH602, 605, 606 and 608 to target groundwater in the natural sands above the sandstone bedrock, and within the bedrock itself. Boreholes 601, 603, 605, 606, 607 and 608 were extended deeper into the sandstone bedrock for geotechnical purposes.

The fieldwork for the test pits within Hospital Road and its verges was conducted by undertaking opportunistic sampling from previously excavated NDD pits (TP601 to TP604) conducted by Cherrie Civil (undertaken for civil construction purposes). Where the pits did not extend into natural soils the pit was drilled further using a hand operated auger, extending into natural soils or refusal (i.e., due to services or exposed bedrock).

Groundwater sampling was undertaken from wells installed in BH608 and previously installed well in BH12 (refer Drawing 4, Appendix A). These wells were selected for sampling as they were positioned hydraulically upgradient (BH608) and downgradient (BH12) within or just outside the site. Other wells which may have been suitable were found to be dry at the time of sampling.

8.2 Sampling Procedure

8.2.1 Soil

Environmental sampling was performed with reference to current industry standards. All sampling data was recorded on DP chain-of-custody (CoC) sheets. The general sampling and sample management procedures comprised:

- Collection of samples into laboratory-prepared glass jars with Teflon-lined lids, capping immediately to minimise headspace within the sample jar. Preliminary screening for asbestos was achieved by sub-sampling of the submitted jars by the laboratory;
- Field screening of recovered samples using a Photo-Ionisation Detector (PID) for Volatile Organic Compounds (VOC);
- New disposable nitrile gloves were worn by the field engineer for each sample collected thereby reducing the potential for cross-contamination;
- Decontamination of sampling equipment in-between sampling locations with a three-stage wash procedure, using a 5% solution of a phosphate free detergent (Decon 90) and deionised water; Collection of 10% replicate samples for quality control (QC) purposes;

- Labelling of sample containers with individual and unique identification details, including project number, sample location and sample depth (where applicable); and
- Placement of the sample jars into a cooled, insulated and sealed container for transport to the laboratory.

8.2.2 Groundwater

The groundwater sampling and handling procedures comprised:

- Following installation, the monitoring wells were developed by pumping until dry or a minimum of three well volumes in order to remove as far as practicable any fluids introduced during drilling and to facilitate connection to the local groundwater aquifer;
- Measurement of common groundwater parameters (temperature, pH, electrical conductivity, dissolved oxygen, redox potential and turbidity) before and after micro-purging with a low-flow peristaltic pump to ensure groundwater parameters were stabilised prior to sampling;
- Sampling using a low-flow peristaltic pump using disposable LDPE tubing. Samples were decanted directly into containers with preservatives for specific analytes, samples recovered for metals were filtered directly in the field using an in-line 0.45 µm disposable filter;
- Decontamination of non-disposable sampling equipment in-between sampling locations with a three-stage wash procedure, using a 5% solution of a phosphate free detergent (Decon 90) and deionised water; Collection of 10% replicate samples for quality control (QC) purposes;
- Labelling of sample containers with individual and unique identification details, including project number and sample location; and
- Placement of the sample containers into a cooled, insulated and sealed container for transport to the laboratory.

8.3 Analytical Rationale

The analytical scheme for soil and groundwater samples was designed to obtain an indication of the potential presence and possible distribution of identified CoPC identified by the CSM, namely metals / metalloids, TRH, BTEX, PAH, OCP, OPP, PCB, phenols, VOC, explosives / ammonia (soils) and asbestos (soils). The results of the analytical testing were compared with the adopted site assessment criteria (SAC) discussed in Section 9.

8.4 Quality Assurance and Quality Control (QA / QC)

This DSI has been devised in general accordance with the seven-step Data Quality Objective (DQO) process which is provided in Appendix B, Schedule B2 of NEPC (2013). The DQO process is outlined as follows:

- State the problem;
- Identify the decision;
- Identify inputs into the decision;

- Define the boundary of the assessment;
- Develop a decision rule;
- Specify acceptable limits on decision errors; and
- Optimise the design for obtaining data.

The DQOs adopted for this investigation are provided in Appendix D.

8.5 Data Quality Indicators

The performance of the assessment in achieving the DQO was assessed through the application of Data Quality Indicators (DQI) as defined by:

Precision:	A quantitative measure of the variability (reproducibility) of data;
Accuracy:	A quantitative measure of the closeness of reported data to the "true" value;
Representativeness:	The confidence (expressed qualitatively) that data are representative of each media present on the site;
Completeness:	A measure of the useable data from a data collection activity; and
Comparability:	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

Further comments on the DQIs are presented in Appendix D.

9. Site Assessment Criteria

The Site Assessment Criteria (SAC) for the identified CoPC are based on the health investigation levels (HIL), health screening levels (HSL), ecological investigation levels (EIL) and ecological screening levels (ESL) in accordance with Schedule B1 of NEPC (2013). Petroleum based health screening levels for direct contact have been adopted from the CRC CARE Technical Report no.10 (CRC CARE, 2011) as referenced by NEPC (2013).

A hospital generally has numerous potential soil exposure scenarios, and therefore does not fit solely within one generic land use scenario as listed in NEPC (2013). Given the potential proposed development and based on the CSM the adopted land use scenarios are as follows:

- **Residential B** - Residential end use scenario with minimal access to underlying soils which is considered generally representative of the proposed hospital usage for patients; and
- **Commercial and Industrial D** - Commercial and industrial end use for roads and parts of the proposed HRL (continuation of present use). This is also considered to screen for hospital workers and as a conservative screen for intrusive maintenance workers (also representing construction workers).

Appendix F outlines in more detail the relevant investigation and screening levels adopted for soils. All site specific and / or theoretical assumptions relevant to the selection of the investigation and screening levels have been outlined in each sub-section as required.

10. Fieldwork Results (2020 Sampling)

The subsurface conditions at each test location are provided in the logs attached in Appendix E, along with descriptive notes, field records and calibration records for the groundwater sampling. The conditions encountered in the current investigation are summarised as:

- **PAVEMENT / SLAB:** A 30 - 100 mm thick asphaltic concrete surfacing (within Hospital Road).
- **FILL / ROADBASE:** Fine to medium, grey and brown medium grained sandy gravel, fine to medium igneous gravel and medium grained sandstone gravel to depths of 0.3 m.
- **FILL / Gravelly SAND:** Medium, brown, fine sandstone and igneous gravel, from depths of 0.3-0.8 m, underlying the roadbase layer. Within the Stage 2 area a layer was observed with crushed sandstone material.
- **FILL / Silty SAND:** Fine to medium, brown with rootlets, trace clay. Encountered within test pits within garden beds on the verges of Hospital Road to depths of 0.4 m.
- **FILL / SAND:** Fine to medium, brown, with silt and with variable amounts of igneous and sandstone gravel. Trace quantities of anthropogenic materials including glass, brick, tile charcoal at select locations.
- **Clayey SAND / Sandy CLAY:** Fine to medium, orange-brown, low plasticity fines in the northern boreholes (BH604 and 605). From depths starting at 1.5 m extending until sandstone bedrock. This layer is considered to be associated with the Newport soil landscape group.
- **SAND:** Fine to medium, grey and yellow-brown, trace silt, located in the more southern boreholes. From depths of 0.4 m extending until the sandstone bedrock. A layer of indurated and weakly cemented sand ('coffee rock') was noted at BH602, increased clay content was noted at BH607 and 608. These layers are considered to be associated with Tuggerah soil landscape group.
- **SANDSTONE:** Hawkesbury sandstone bedrock was encountered from 2.5 m in the north of Stage 2 (BH608), 3.1 m in the north of Hospital Road (BH606) and 4.02 m in the south of Hospital Road (BH602). The sandstone was generally medium to coarse grained, pale grey and yellow, very low to high strength (increasing with depth) and with slight degrees of fracturing and weathering. Thin layers of residual sandy clay (extremely weathered sandstone) were noted above the very low to low strength sandstone at select locations.

Groundwater levels were measured at 49.6 m AHD (3.28 m bgl, BH 608), 48.6 m AHD (3.36 m bgl, BH13) and 49.8 m AHD (5.88 m bgl, BH12) respectively. Measured groundwater parameters indicated slightly acidic, saline and aerobic conditions and an oxidising environment. It is noted that groundwater levels are transient and will change with time and climatic conditions.

11. Laboratory Results

A summary of the laboratory results is presented in Tables C1 and C2, Appendix C, for soil and groundwater respectively. The tables include the relevant previous investigation data, and the current data. Those results that fall within the remediated Stage 1 site (ASB) are shown on italics on Table C1. Laboratory certificates of analysis, chain-of-custodies and sample receipts for the current (2020) sampling are provided in Appendix G. Laboratory certificates for the previous investigations can be found in the DP (2018) and DP (2019a) reports.

11.1 Soil

All results were found to be within the adopted SAC with the exception of the detection of asbestos at one location, minor exceedances of PAH and ecological exceedances for select metals. The exceedances as per a Residential-B land-use scenario are summarised below in Table 3 in conjunction with previous exceedances within the current site, as reported in DP (2018), (2019a), (2019d) & (2019e), further discussion is provided in Section 13 for applicability of parts of the site for different land-use scenarios. The table excludes any exceedances that were previously remediated under the Stage 1 (ASB) validation process.

Table 3: Summary SAC Exceedances mg/kg (Current and Previous Results)

Sample ID	EIL / ESL B Exceedances	HIL / HSL B Exceedances
Current Investigation		
TP601/0.1-0.3	Copper - 67 (EIL 65)	-
TP602/07-0.9	*B(a)P – 0.96 (ESL 0.7)*	Asbestos detected *
TP603/0.3-0.5	Nickel – 19 (EIL 9)	-
BH601/0.4-0.5	Nickel – 22 (EIL 9)	-
BH603/.5-0.7	Nickel – 27 (EIL 9)	-
BH603/0.8-1.0	Nickel – 27 (EIL 9) Zinc – 410 (EIL 240)	-
BH604/1.0-1.2	Zinc – 240 (EIL 240) *B(a)P – 3.3 (ESL 0.7)*	B(a)P TEQ – 4.6 (HIL 4)
BH605/0.4-0.5	Nickel – 35 (EIL 9)	-
BD1/20200819 [a]	Nickel – 34 (EIL 9)	-
BH606/0.5	*B(a)P – 3.4 (ESL 0.7)*	B(a)P TEQ – 4.9 (HIL 4)
Stage 2 *In-Situ* Waste Classification (DP, 2019e)		
S2-TP1/0-0.2	Nickel – 15 (EIL 9)	-
BD1/20191205 [a]	Nickel – 14 (EIL 9)	-
S2-TP2/0-0.1 & 0.1-0.2	Nickel – 13 (EIL 9)	-
S2-TP5/0.4-0.6	Nickel – 19 (EIL 9) *B(a)P – 0.81 (ESL 0.7)*	-

Sample ID	EIL / ESL B Exceedances	HIL / HSL B Exceedances
Current Investigation		
S2-TP6/0-0.2	Nickel – 31 (EIL 9) *B(a)P – 1.2 (ESL 0.7)*	-
S2-TP6/0.9-1.0	Nickel – 39 (EIL 9)	-
S2-TP8/0-0.2	Nickel – 48 (EIL 9)	-
S2-TP8/0.8-1.0	Nickel – 42 (EIL 9)	-
S2-TP12/0-0.2	Nickel – 41 (EIL 9) *B(a)P – 1.2 (ESL 0.7)*	-
S2-TP12/0.8-1.0	Nickel – 10 (EIL 9)	-
S2-TP13/0.5-0.7	Nickel – 23 (EIL 9)	-
S2-TP19/0.2	Nickel – 9 (EIL 9)	-
S2-TP19/0.4-0.6	Nickel – 86 (EIL 9)	-
S2-TP20/0.3-0.5	Nickel – 56 (EIL 9)	-
BD2/20191210 (S2-TP21/0-0.2)	Nickel – 130 (EIL 9)	-
S2-TP21/0.3-0.5	Nickel – 130 (EIL 9)	-
S2-TP22/0-0.2	Nickel – 16 (EIL 9)	-
S2-TP22/0.3-0.5	Nickel – 48 (EIL 9)	-
S2-TP23/0-0.2	Nickel – 35 (EIL 9)	-
S2-TP23/0.3-0.5	Nickel – 110 (EIL 9) Zinc – 370 (EIL 240)	-
S2-TP23/0.8-1.0	Nickel – 55 (EIL 9)	-
S2-TP24/0-0.2	Nickel – 10 (EIL 9)	-
S2-TP24/0.5-0.7	Nickel – 89 (EIL 9)	-
S2-TP25/0-0.2	Nickel – 12 (EIL 9)	-
S2-TP25/0.3-0.5	Nickel – 50 (EIL 9)	-
S2-TP26/0-0.2	Nickel – 23 (EIL 9)	-
DSI (DP, 2019a)		
TP302/0.5-0.6	*B(a)P – 4.4 (ESL 0.7)*	B(a)P TEQ – 6.3 (HIL 4)
TP309A	*B(a)P – 2.1 (ESL 0.7)*	-
BD1/20190212 [a]	*B(a)P – 1.9 (ESL 0.7)*	-
TP317/0-0.2	*B(a)P – 1.0 (ESL 0.7)*	-
BD1/20190211 [a]	*B(a)P – 2.2 (ESL 0.7)*	-
TP318/0-0.2	*B(a)P – 1.4 (ESL 0.7)*	Asbestos detected **
TP318/0.4-0.5	*B(a)P – 0.9 ESL 0.7)*	-
BD2/20190211 (TP328/0-0.2)	*B(a)P – 0.98 ESL 0.7)*	-

Sample ID	EIL / ESL B Exceedances	HIL / HSL B Exceedances
Current Investigation		
TP329/0.1-0.2	-	Asbestos detected **
BH206/0.3-0.4	*B(a)P –1.7 (ESL 0.7)*	PCB – 1.6 (HIL 1)
BH207/0.1-0.2	*B(a)P – 1.2 (ESL 0.7)*	-
BH209/0.1-0.2	*B(a)P – 1.4 ESL 0.7)*	-
BH210/0.2-0.3	*B(a)P – 1.5 ESL 0.7)*	-
BH213/0.1-0.2	Zinc – 300 (EIL 240)	-
TP4/0.4-0.5	*B(a)P – 1.5 ESL 0.7)*	-
PSI (DP, 2018)		
BH3/0/1-0/2	Nickel - 79 (EIL 9)	-
BH4/0.07-0.15 (roadbase)	Copper - 100 (EIL 65) B(a)P – 57.0 ESL 0.7) TRH C_{16}-C_{34} – 6600 (ESL 1700) TRH C_{10} – C_{16} - naphthalene – 170 (ESL 170)	B(a)P TEQ – 77 (HIL 4)
BH109/0-0.2	*B(a)P – 0.8 (ESL 0.7)*	-
BH110/0-0.2	Nickel - 26 (EIL 9) *B(a)P – 1.4 (ESL 0.7)*	-
BH111/0-0.2	Zinc – 390 (EIL 240) *B(a)P – 6.4 (ESL 0.7)*	B(a)P TEQ – 8.2 (HIL 4)
BH112/0-0.2	Copper - 110 (EIL 65)	-
BH113/0.5-0.7	*B(a)P – 1.2 (ESL 0.7)*	-

Notes:

Results in italics are below the higher reliability CRC CARE guidelines for B(a)P (CRC CARE, 2017), see further discussion in Section 13.

* Asbestos detected below the laboratory limit of reporting (0.1g/kg)

** Suspected asbestos detected during field screening (DP, 2019a)

Statistical analysis for all fill samples (excluding roadbase) for B(a)P, B(a)P TEQ and PCB conducted using ProUCL statistical software is attached in Table C4.

11.2 Groundwater

All groundwater results from the current investigation were within the adopted GIL with the exception of minor exceedances of copper, zinc and B(a)P:

- Copper - BH608 0.009 mg/L (GIL 0.0014 mg/L);

- Zinc - BH608 0.017 mg/L (GIL 0.008 mg/L); and
- B(a)P - BD1/20200908 (BH608) 0.0003 mg/L & BH608 0.0002 (GIL 0.0001 mg/L).

12. Preliminary Waste Classification

A six-step procedure for determining the type of waste and the waste classification is provided in the NSW EPA *Waste Classification Guidelines* (NSW EPA 2014). Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against Contaminant Threshold (CT) values specific to a waste category. Alternatively, the data can be assessed against Specific Contaminant Concentration (SCC) thresholds when used in conjunction with Toxicity Characteristic Leaching Procedure (TCLP) thresholds.

The CT, SCC, and TCLP values relevant to this waste classification are shown in Table C3 (Appendix C).

The following Table presents the results of the six-step procedure outlined in NSW EPA (2014) for determining the type of waste and the waste classification. This process applies to the fill at the site.

Table6: Six-Step Classification

Step	Comments	Rationale
1. Is it special waste?	Yes (refer to further discussion below)	Asbestos-Containing Materials (ACM) were observed and detected by the analytical laboratory at one test location (TP602) during the current investigation. Further asbestos was identified during previous investigations within the current site boundary. However, this material is understood to have previously been removed, apart from the “tear drop” area. No coal tar, clinical or related waste, or waste tyres were observed in the boreholes.
2. Is it liquid waste?	No	Materials composed of a soil matrix.
3. Is the waste “pre-classified”?	No	Fill did not fall into one of the pre-classified categories.
4. Does the Waste have hazardous waste characteristics	No	Waste not observed to / or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances or corrosive substances, substances liable to spontaneous combustion.
5. Chemical Assessment	Conducted	Refer to Table C3 in Appendix C.

Step	Comments	Rationale
6. Is the Waste Putrescible?	No	All observed components of filling composed of materials pre-classified as non-putrescible [a] (i.e., soil).

Note: a wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (EPA, 2014).

As shown in Table C3 (Appendix C) all contaminant concentrations for the analysed samples from the current investigation were within the contaminant thresholds (CT1s) for General Solid Waste (GSW) with the exception of:

- Lead - BH604/1.0-1.2 (150 mg/kg); and
- B(a)P - TP602/0.7-0.9 (0.96 mg/kg), BH604.1.0-1.2 (3.3 mg/kg) and BH606/0.5 (3.4 mg/kg).

Further toxicity characteristic leaching procedure (TCLP) testing on these samples for both lead and B(a)P resulted in combined SCCC and TCLP results within both SCC1 and TCLP1 respectively.

Previous investigations noted exceedances of lead and B(a)P (as noted on Table C3, Appendix C) within the current site. However, TLCP testing on selected worst-case concentrations also resulted in combined SCCC and TCLP results within both SCC1 and TCLP1 respectively.

Asbestos was noted at one test location (TP602) located in the garden beds to the east of Hospital Road. Further asbestos was previous identified within the RCR Stage 1 and 2 areas during the DSI (DP, 2019a), particularly during field screening in the footprints of the former residential buildings. Furthermore, ACM is likely to remain within the tear drop area shown on Drawing 5, Appendix A.
It is noted that OCP (scheduled chemicals, present as aldrin and dieldrin) were detected above 2 mg/kg previously at S2-TP12/0.35-0.5 (2.5 mg/kg) in addition to minor detections at S2-TP6/0.9-1.0 (0.5 mg/kg) and S2-TP25/0.3-0.5 (0.2 mg/kg). Therefore, the fill material near S2-TP12 requires management as per the Scheduled Chemical Waste Control Order (NSW EPA, 2004), which enforces limitations on the re-use / processing of scheduled wastes. However, as the detected concentrations are within 50 mg/kg (CT1 waste guidelines) there is no restriction on the transport of the material for off-site disposal to landfill. Overall, these detections are not considered to significantly impact any waste management strategy.

On this basis the fill soils across the site are given a preliminary classification of **General Solid Waste (non-putrescible) - Special Waste (asbestos)**. Subject to further *ex-situ* testing to confirm or otherwise the presence of asbestos and potentially elevated levels of lead and B(a)P in fill, it is possible that some of the fill may be re-classified as General Solid Waste (non putrescible).

13. Discussion

13.1 Soils

The results of the current investigation indicate similar results to previous investigations, with exceedances of health-based criteria in soils for B(a)P TEQ and asbestos detected at one location.

Statistical analysis of B(a)P TEQ results for all test locations (current and previous) within fill (excluding roadbase samples) using ProUCL Statistical software (refer Appendix C) resulted in a calculated 95% Upper Confidence Limit (UCL) of 1.4 mg/kg which is within the adopted HIL of 4 mg/kg.

It is also noted that the exceedance of B(a)P TEQ at BH604 (4.6 mg/kg) is located within Hospital Road and (part of the proposed HRL) where a commercial / industrial D land-use scenario may be more applicable, and therefore is within HIL D (40 mg/kg). The additional exceedance at BH606 (4.9 mg/kg) is located proximate to the former Eurimbla Avenue and is therefore, considered to be possibly associated with the previously tested fill, which, particularly within roadbase layers exhibited elevated PAH levels.

The previously detected exceedance of PCB at BH206 is not considered to pose a significant health risk given the minor exceedance (1.6 mg/kg, HIL 1 mg/kg). A 95% UCL of 0.32 mg/kg was calculated for all fill samples with the current site (excluding roadbase) which is within the SAC. Therefore, it is considered that the impact at BH206 is likely to be relatively localised.

Exceedances of environmental-based criteria were noted for metals (copper, nickel and zinc) and B(a)P. The elevated levels of B(a)P are not considered to be significant when compared against the higher reliability CRC CARE (2017) guidelines which provides 95% confidence intervals of 21-135 mg/kg (33 mg/kg mean value) for urban, residential and public open space land-use. The elevated levels of metals were also previously not considered to be significant given the minor elevated levels, and that they could be appropriately managed by using suitability appropriate landscaping materials which meet both the SAC and horticultural requirements. The relative impact of these exceedances is also considered minor given much of the development will comprise building footprints, roads and pathways with limited landscaping areas.

Further exceedances of metals, TRH and PAH are also considered to be possible within roadbase materials beneath Hospital Road. As previously, these may be managed preferentially through re-use under the Recovered Aggregate Order (NSW EPA, 2014).

No measurable levels of VOC or explosives were noted. Minor detection of ammonia was noted just above the laboratory practical quantification limit but is not considered to be significant.

13.2 Asbestos

The detection of asbestos at one location (TP602) indicates the potential for further asbestos to be present within fill materials along the eastern verge of Hospital Road in the nearby garden beds. Further testing as per WA DoH guidelines (WA DoH, 2009) would be necessary to quantify the potential risks and to assess the suitability of these soils to remain or be-reused for the proposed development. Further asbestos was previous noted during the post-demolition investigation (DP, 2019a) predominately in surficial soils within the RCR development area, including the “tear drop” area.

Whilst it is understood that the majority of the identified asbestos contamination within the RCR development area was removed and validated during remedial works (DP, 2019c), this did not encompass the entirety of Stage 2, with only the stormwater easement cleared of asbestos contamination. It is therefore considered to be possible that residual or unidentified asbestos contamination may be present and / or have been disturbed during ongoing construction works and construction related activities within the site.

13.3 Groundwater

The results of the groundwater monitoring indicate similar groundwater conditions with minor elevated levels of metals, which were previously considered to be indicative of regional, urban groundwater conditions. Minor detection of B(a)P in groundwater above the GIL are not considered to be significant given the proposed site usage (lack of direct access to groundwater), however, the detection is considered possible to be indicative of the diffusive B(a)P contamination present within fill across the larger RCR development.

13.4 Waste

The results of the preliminary waste classification indicate a preliminary classification **General Solid Waste (non-putrescible) - Special Waste (asbestos)**.

It is also noted that waste classification works conducted during the Stage 1 RCR remediation works (DP, 2019c), noted further exceedances for both lead and B(a)P, however, TCLP testing also resulted in combined SCCC and TCLP results within both SCC1 and TCLP1 respectively for multiple separate stockpiles of fill. As such it is considered likely that there may be further minor exceedances of lead and B(a)P when testing excavated soils, however, it is considered probable that further TCLP testing will produce similar results. As noted earlier, further impacts of asbestos may be present within the garden beds along Hospital Road and within the RCR development area. Further *ex-situ* assessment of stockpiled soils is recommended prior to transport and off-site disposal.
Previously a waste management strategy for the RCR development area comprised separating a nominal upper layer of fill (e.g., 300-500 mm deep) which was noted to contain the majority of asbestos contamination impacts, and deeper fill which generally had less observed asbestos contamination.

14. Updated Conceptual Site Model

Based on the results summarised within this report and the preliminary CSM, an updated CSM containing complete source-pathway-receptor linkages as confirmed by the testing is summarised in Table below. Whilst source S4 (off-site activities, as per the preliminary CSM) is still considered to exist the measurable impacts are considered to be negligible and more representative of general urban conditions (e.g., elevated metal concentrations in groundwater) rather than posing a risk for the proposed development. No measurable impacts were detected from the notified dry-cleaning business (VOC), the nearby hospital or potential impacts from the former air-raid shelters (ammonia, explosives).

Table 7: Updated CSM (Likely Source-Pathway-Receptor Linkages)

Source	Pathway	Receptor
S1 Fill of unknown origin S2 Previous structures S3 Construction Activities	P1: Ingestion and dermal contact	R1: Current site users R2: Construction and maintenance workers R3: Final end users
	P2: Inhalation of dust and/or vapour	R1: Current site users R2: Construction and maintenance workers R3: Final end users (educational / hospital) R4: Land users in adjacent areas (educational / hospital / residential / commercial / industrial)
	P3: Leaching of contaminants and vertical migration into groundwater	R5: Groundwater (low potential)
	P4: Surface water run-off P5: Lateral migration of groundwater	R6: Surface water
	P6: Contact with terrestrial ecology	R7: Terrestrial ecology

15. Conclusion and Recommendations

Based upon the results presented within this report it is considered that there is a low to medium risk of contamination at the site, primarily related to existing fill and the (potential) presence of asbestos and PAH. It is therefore recommended to develop a Remediation Action Plan (RAP) to address contamination at the site. The RAP will provide strategies for:

- Assessing the data available to determine areas of environmental concern (AEC) requiring remediation;
- Remediation of the AEC;
- Management of waste including asbestos impacts in soil and roadbase materials;
- Management of excavations and tracking of soil movement within the site and off-site;
- Management of imported materials;
- Asbestos and unexpected finds management; and
- Further testing (including validation of identified contamination) as required.

It is considered the following the successful implementation of a RAP the site will be rendered suitable for the proposed development.

16. References

CRC CARE. (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater.* Parts 1 to 3, Technical Report No. 10: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment.

CRC CARE. (2017). *Risk-based Management and Remediation Guidance for Benzo(a)pyrene.* Technical Report no. 39: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment.

DP. (2018). *Report on Preliminary Site Investigation for Contamination. Randwick Campus Redevelopment, Hospital Road and High, Magill and Botany Streets Randwick.*

DP. (2019a). *Report on Detailed Site Investigation. Randwick Campus Redevelopment. Bound by High, Magill Hospital and Botany Streets, Randwick. Ref: 72505.14.R.001.Rev1.*

DP. (2019b). *Remediation Action Plan. Randwick Campus Development, Stage 1 and IASB Additional. Botany and Magill Streets, and Hospital Road, Randwick. Ref 72505.14.R.002.Rev9.*

DP. (2019c). *Report on Stage 1 Validation. Randwick Campus Redevelopment, Botany Street, Randwick. Ref 72505.15.R.039.Rev0.*

DP. (2019d). *Report on Detailed Site Investigation. IASB Addition - Randwick Campus Redevelopment, Hospital Road, Randwick. Ref 72505.16.R.001.Rev0.*

DP. (2019e). *Stage 2 In-Situ Waste Classification Assessment, Prince of Wales Hospital Redevelopment, Randwick Bounded by High Street and Hospital Road, Randwick.*

DP. (2020a). *Report on Preliminary Site Investigation for Contamination. SCH / CCCC, Randwick Campus Redevelopment Hight Street and Hospital Road, Randwick.*

DP. (2020b). *Assessment of Central "Tear Drop" Area. Randwick Campus Redevelopment Project, Prince of Wales Hospital, Randwick.*

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM].* Australian Government Publishing Services Canberra: National Environment Protection Council.

NSW EPA. (1995). *Contaminated Sites, Sampling Design Guidelines.* NSW Environment Protection Authority.

NSW EPA. (2004). *Chemical Control Order in Relation to Scheduled Chemical Wastes.*

NSW EPA. (2014). *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014, The recovered aggregate order 2014.* NSW Environment Protection Authority.

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* NSW Environment Protection Authority.

NSW EPA. (2016). *Addendum to the Waste Classification Guidelines (2014) - Part 1: Classifying Waste.* NSW Environment Protection Authority.

WA DoH. (2009). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.* WA Department of Health.

17. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at Hospital Road and High Street, Randwick in accordance with DP's proposals (SYD200742. P.002.Rev0 dated 23 November 2020) and acceptance received from Pricewaterhouse Coopers (Variation Notice, dated 1 December 2020) on behalf of Health Infrastructure and Lendlease Building Pty Ltd. The work was carried out as a variation under a professional services agreement with Health Infrastructure (Contract No. HI17299). This report is provided for the exclusive use of Health Infrastructure for this project only and for the purposes as described in the report. It should not be used for other projects or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and / or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Asbestos has detected by laboratory analysis in filling materials at the test locations sampled and analysed. Building demolition materials, such as concrete, brick, tile etc. were, however, located in previous below-ground filling and/or above-ground stockpiles and these are considered as indicative of the possible presence of further hazardous building materials (HBM), including asbestos. Asbestos was also noted in below-ground filling during previous investigations.

Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions and parts of the site being inaccessible and not available for inspection/sampling. It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

Notes About this Report

Drawings

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 02/08/2020)

Legend

- SCH1 / CCCC Boundary (the site)
- Hospital Road REF Boundary
- IASB Addition Boundary
- RCR Stage 1 Boundary (ASB)
- RCR Stage 2 Boundary
- Stage 2 Stormwater Easement
- Former Eurimbla Avenue Extent

0 20 40 60 80 100 m

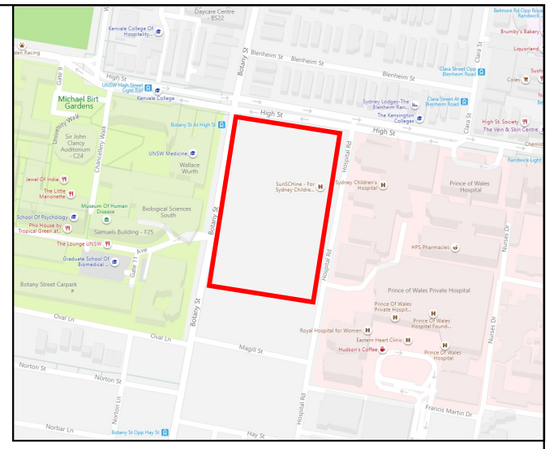
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Health Infrastructure		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:1500 @A3	DATE:	21.04.2021

TITLE: **Site Locality**
SCH1 / CCCC - Randwick Campus Redevelopment
Hospital Road and High, Magill and Botany Streets, Randwick, NSW

N

PROJECT No:	72505.19
DRAWING No:	1
REVISION:	2



LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 02/08/2020)

Legend

- SCH / CCCC Building
- Additional SCH / CCCC Development Areas
- RCR Stage 1 Boundary (ASB)
- IASB Boundary Addition Area
- Stormwater Easement

0 20 40 60 80 100 m

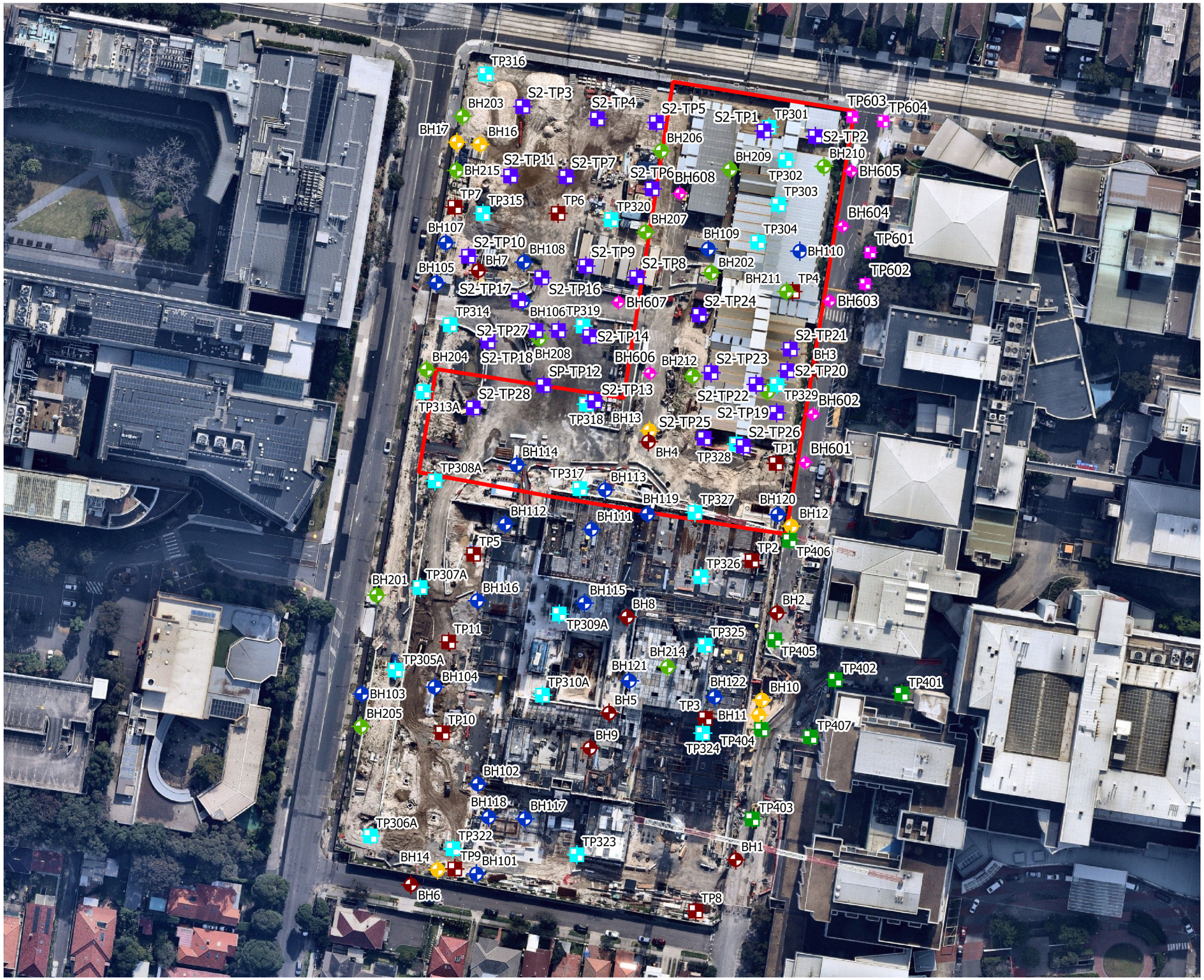
Douglas Partners
Geotechnics / Environment / Groundwater

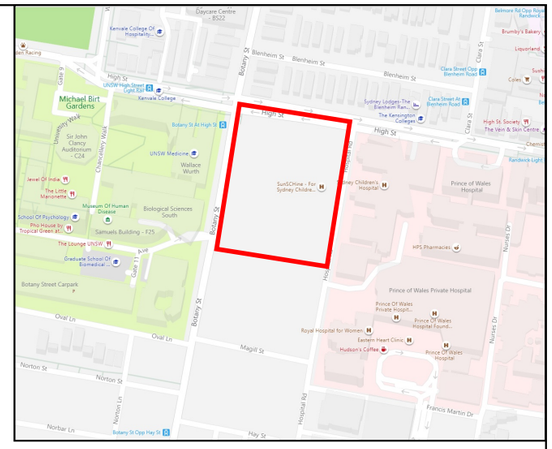
CLIENT:	Health Infrastructure		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:1500 @A3	DATE:	21.04.2021

TITLE: **Proposed SCH1 / CCCC Development and Existing Hospital Buildings**
SCH1/CCCC - Randwick Campus Redevelopment
Hospital Road and High, Magill and Botany Streets, Randwick, NSW

N

PROJECT No:	72505.19
DRAWING No:	2
REVISION:	2





Notes:
1. Basemap from nearmap.com (dated 08/02/2020)

Legend

- SCH1/CCCC Boundary (the site)
- Current SCH1/CCCC Boreholes
- Current SCH1/CCCC Test Pits
- DP Environmental borehole (PSI, DP 2018)
- DP borehole location (PSI,DP 2018)
- DP borehole location (DSI, DP 2019a)
- DP test pit location (DSI, DP 2019a)
- Post Demolition Test Pit (DSI, DP 2019)
- IASB Sample Locations (IASB DSI, 2019d)
- Existing Groundwater Wells
- Stage 2 Waste Classification Test Pits (DP 2019e)

0 25 50 75 m

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Health Infrastructure		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:1250 @ A3	DATE:	22.04.2021

TITLE: **Previous Test Locations**
SCH1/CCCC - Randwick Campus Redevelopment
Hospital Road, High and Magill Streets, Randwick NSW

N

PROJECT No:	72505.19
DRAWING No:	3
REVISION:	2

LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 08/02/2020)

Legend

- SCH boundary updated
- Current SCH1/CCCC Boreholes
- Current SCH1 / CCCC Test Pits
- DP Environmental borehole (PSI, DP 2018)
- DP borehole location (PSI,DP 2018)
- DP borehole location (DSI, DP 2019a)
- DP test pit location (DSI, DP 2019a)
- Post Demolition Test Pit (DSI, DP 2019)
- IASB Sample Locations (IASB DSI, 2019d)
- Existing Groundwater Wells
- Stage 2 Waste Classification Test Pits (DP 2019e)

0 10 20 30 40 50 m

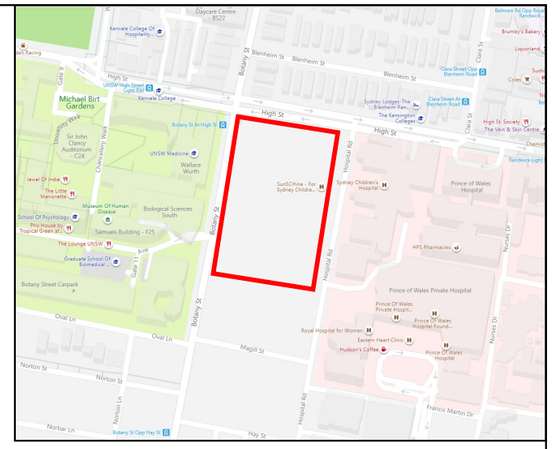
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Health Infrastructure		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:750 @ A3	DATE:	21.04.2021

TITLE: **Current and Previous Test Locations**
SCH1/CCCC - Randwick Campus Redevelopment
Hospital Road, High and Magill Streets, Randwick NSW

N

PROJECT No:	72505.22
DRAWING No:	4
REVISION:	2



LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 02/08/2020)

Legend

- SCH1/CCCC Boundary (the site)
- Previous Surficial ACM Finds (DP 2019a)
- "Tear drop" area (soils may contain asbestos)
- DP Environmental borehole (PSI, DP 2018)
- DP test pit location (DSI, DP 2019a)
- Post Demolition Test Pit (DSI, DP 2019a)
- ACM observed at test location/during seiving (0 - 0.2 m depth) (DP 2019a)
- ACM observed at test location/during seiving (0.4 - 0.5 m depth) (DP 2019a)

0 10 20 30 40 50 m

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Health Infrastructure		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:750 @A3	DATE:	21.04.2021

TITLE: **Previous Asbestos Finds**
SCH1/CCCC - Randwick Campus Redevelopment
Hospital Road and High, Magill and Botany Streets, Randwick, NSW

N

PROJECT No:	72505.22
DRAWING No:	5
REVISION:	2

Appendix B

Site Photographs

Photo 1: Northern end of hospital road

Photo 2: Southern part of Hospital Road within IASB area

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	72505.19
	SCH1 / CCCC Randwick Campus Redevelopment	PLATE No:	1
	High Street and Hospital Road, Randwick	REV:	0
	CLIENT: Health Infrastructure	DATE	12/10/2020

Photo 3: Site Conditions within the RCR Construction Site

Photo 4: Nearby Existing SCH and Prince of Walse Hospital

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	72505.19
	SCH1 / CCCC Randwick Campus Redevelopment	PLATE No:	2
	High Street and Hospital Road, Randwick	REV:	0
	CLIENT: Health Infrastructure	DATE	12/10/2020

Photo 5: Typical test pit profile within Hospital Road verges at TP604

Photo 6: Test pit profile within garden beds to east of Hospital Road

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	72505.19
	SCH1 / CCCC Randwick Campus Redevelopment	PLATE No:	3
	High Street and Hospital Road, Randwick	REV:	0
	CLIENT: Health Infrastructure	DATE	12/10/2020

Appendix C

Summary Results

Douglas Partners
Geotechnics | Environment | Groundwater

Table C1 - Summary of Soil Laboratory Analysis (All results in mg/kg unless otherwise stated)

Sample ID	Depth	Sampling Date	Soil Type*	Metals								PAH				Phenols	TRH						BTEX				Organochlorine Pesticides (OCP)										OPP	PCB	Asbestos		VOC		
				Arsenic	Cadmium	Chromium (VI)[b]	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a) Pyrene (BaP)	BaP TEQ	Total PAH	Total Phenols	TRH C_6-C_{10}	TRH >C_{10}-C_{16}	C_{16} - C_{34} (F3)	C_{34} - C_{40} (F4)	C6 - C10 less BTEX (F1)	C_{10} - C_{16} less Naphthalene (F2)	Benzene	Toluene	Ethylbenzene	Total xylenes	DDT + DDD + DDE	Aldrin and Dieldrin	Chlordane	Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyrifos	Total PCB	Asbestos ID	AF/FA	Total Positive VOC	Ammonia	Explosives (Nitroamides, Nitrobenzenes, Nitrates)
	Practical Quantitation Limit (PQL)			4	0.4	1	1	1	0.1	1	1	0.1	0.05	0.5	0.05	5[d]	25	50	100	100	25	50	0.2	0.5	1	3	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1g/kg	0.001 % w/w	1	0.5	c
Site Assessment Criteria (SAC)																																										
HIL B & HSL B (direct contact)				500	150	500	30000	1200	120	1200	60000	2200	-	4	400	130	5600	4200	5800	8100	-	-	140	21000	5900	17000	600	10	90	400	20	10	15	500	340	1	-		-	-	-
HIL D & HSL D (direct contact)				3000	900	3600	240,000	1500	730	6000	400000	11000	-	40	4000	660	26000	20000	27000	28000	-	-	430	99000	27000	81000	3600	45	530	2000	100	50	80	2500	2000	7	-		-	-	-
HSL A&B - vapour intrusion (Sand)				-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
HSL D -vapour intrusion (Sand)				-	-	-	-	-	-	-	-	NL	-	-	-	-	-	-	-	-	260	NL	3	NL	NL	NL	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
EIL (Res/Open Space , coarse)				100	-	470	65	1100	-	9	240	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
EIL (Commercial/Industrial, coarse)				160	-	770	80	1800	-	10	300	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Urban Res)				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	300	2800	180	120	50	85	70	105	-	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Commercial/Industrial)				-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	1700	3300	215	170	75	135	165	180	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Management Limits (Res, Parkland - Commercial/Industrial)				-	-	-	-	-	-	-	-	-	-	-	-	-	700	1000	2500 -3500	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Current Investigation Locations (2020)																																										
TP601	0.1-0.3	02/09/2020	Fill	<4	<0.4	7	67	10	<0.1	3	41	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<50	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
TP601	1.0-1.2	02/09/2020	Fill	<4	<0.4	4	12	79	0.8	1	140	<0.1	0.2	<0.5	1.9	-	<25	<50	<100	<100	<50	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	<1	-	-
TP602	0.7-0.9	02/09/2020	Fill	<4	<0.4	3	13	96	0.1	3	130	<0.1	0.96	1.4	9	-	<25	<50	<100	<100	<50	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	**YES***	-	-	-	-
TP603	0.3-0.5	02/09/2020	Fill	<4	<0.4	14	12	3	<0.1	19	13	<0.1	0.06	<0.5	0.2	<5	<25	<50	<100	<100	<50	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	-	-
TP604	0.2-0.3	07/04/2020	Fill	<4	<0.4	3	6	5	<0.1	2	13	<0.1	0.5	0.7	5.8	-	<25	<50	170	<100	<50	170	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP604	0.4-0.5	07/04/2020	Fill	<4	<0.4	6	6	28	0.2	5	27	<0.1	0.68	0.9	6.6	<5	<25	<50	<100	<100	<50	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	<0.5	<PQL
BH601	0.4-0.5	19/08/2020	Fill	<4	<0.4	27	7	23	<0.1	22	22	<0.1	<0.05	<0.5	0.1	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	<0.5	<PQL
BH602	0.4-0.6	19/08/2020	Fill	<4	<0.4	3	3	16	<0.1	2	21	<0.1	0.09	<0.5	0.53	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	0.5	<PQL
BH603	0.5-0.7	19/08/2020	Fill	<4	<0.4	24	15	35	<0.1	27	55	<0.1	0.2	<0.5	1.5	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	<0.5	<PQL
BH603	0.8-1.0	19/08/2020	Fill	<4	0.9	5	20	70	0.2	14	410	<0.1	0.2	<0.5	2.2	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH604	0.5-0.7	19/08/2020	Fill	<4	<0.4	6	6	39	<0.1	6	62	<0.1	0.4	0.5	5.7	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH604	1.0-1.2	19/08/2020	Fill	<4	<0.4	7	26	150	0.1	6	240	<0.1	3.3	4.6	30	<5	<25	<50	240	110	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	0.7	<PQL
BH605	0.4-0.5	19/08/2020	Fill	<4	<0.4	43	15	24	<0.1	35	53	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	<1	<0.5	<PQL
BD1/20200819[a]	-	19/08/2020	Fill	<4	<0.4	35	50	17	<0.1	34	52	<0.1	0.07	<0.5	0.4	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	0.9-1.1	19/08/2020	Fill	<4	<0.4	3	26	56	0.1	2	130	<0.1	0.2	<0.5	1.8	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH606	0.5	28/08/2020	Fill	<4	<0.4	2	6	15	<0.1	1	12	<0.1	3.4	4.9	38	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH606	1	28/08/2020	Fill	<4	<0.4	1	2	8	<0.1	<1	7	<0.1	0.06	<0.5	0.3	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH607	0.5	31/08/2020	Fill	<4	<0.4	4	8	73	<0.1	3	24	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH607	1	31/08/2020	Natural Sand	<4	<0.4	1	1	7	<0.1	<1	4	<0.1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH608	0.5	27/08/2020	Fill	<4	<0.4	2	4	6	<0.1	<1	5	<0.1	0.68	1	5.1	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.3	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH608	1	27/08/2020	Fill	<4	<0.4	3	7	29	0.2	<1	6	<0.1	0.5	0.7	4.5	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH608	2	27/08/2020	Natural Sand	<4	<0.4	5	1	5	<0.1	1	3	<0.1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
Stage 2 Waste Classification (DP 2019e)																																										
S2-TP1	0-0.2	5/12/2019	**Fill**	<4	<0.4	3	3	<0.1	<1	15	25	<0.1	0.08	<0.5	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD1 2019 1205	.	5/12/2019	**Fill**	<4	<0.4	3	3	<0.1	1	14	25	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP2	0-0.1	5/12/2019	**Fill**	<4	<0.4	16	12	<0.1	6	13	35	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP2	0.1-0.2	5/12/2019	**Fill**	<4	<0.4	11	7	<0.1	5	13	25	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP2	1.4-1.5	5/12/2019	**Natural**	<4	<0.4	11	<1	<0.1	<1	4	2	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP3	0-0.2	5/12/2019	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP5	0.4-0.6	5/12/2019	**Fill**	<4	<0.4	3	6	<0.1	1	19	62	<0.1	0.81	1.2	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP6	0-0.2	5/12/2019	**Fill**	<4	<0.4	2	4	<0.1	<1	31	28	<0.1	1.2	1.8	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP6	0.9-1.0	5/12/2019	**Fill**	<4	<0.4	3	7	<0.1	1	39	39	<0.1	0.63	0.9	7.4	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	0.5	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-

Sample ID	Depth	Sampling Date	Soil Type*	Metals								PAH				Phenols	TRH						BTEX				Organochlorine Pesticides (OCP)										OPP	PCB	Asbestos		VOC		
				Arsenic	Cadmium	Chromium (VI)[b]	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a) Pyrene (BaP)	BaP TEQ	Total PAH	Total Phenols	TRH C_6-C_{10}	TRH >C_{10}-C_{16}	C_{16}-C_{34} (F3)	C_{34}-C_{40} (F4)	C6 - C10 less BTEX (F1)	C_{10}-C_{16} less Naphthalene (F2)	Benzene	Toluene	Ethylbenzene	Total xylenes	DDT + DDD + DDE	Aldrin and Dieldrin	Chlordane	Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyrifos	Total PCB	Asbestos ID	AF / FA	Total Positive VOC	Ammonia	Explosives (Nitroamides, Nitrobenzenes, Nitrates)
	Practical Quantitation Limit (PQL)			4	0.4	1	1	1	0.1	1	1	0.1	0.05	0.5	0.05	5[d]	25	50	100	100	25	50	0.2	0.5	1	3	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1g/kg	0.001 % w/w	1	0.5	c
Site Assessment Criteria (SAC)																																										
HIL B & HSL B (direct contact)				500	150	500	30000	1200	120	1200	60000	2200	-	4	400	130	5600	4200	5800	8100	-	-	140	21000	5900	17000	600	10	90	400	20	10	15	500	340	1	-		-	-	-
HIL D & HSL D (direct contact)				3000	900	3600	240,000	1500	730	6000	400000	11000	-	40	4000	660	26000	20000	27000	28000	-	-	430	99000	27000	81000	3600	45	530	2000	100	50	80	2500	2000	7	-		-	-	-
HSL A&B - vapour intrusion (Sand)				-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
HSL D -vapour intrusion (Sand)				-	-	-	-	-	-	-	-	NL	-	-	-	-	-	-	-	-	260	NL	3	NL	NL	NL	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
EIL (Res/Open Space , coarse)				100	-	470	65	1100	-	9	240	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
EIL (Commercial/Industrial, coarse)				160	-	770	80	1800	-	10	300	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Urban Res)				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	300	2800	180	120	50	85	70	105	-	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Commercial/Industrial)				-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	1700	3300	215	170	75	135	165	180	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Management Limits (Res, Parkland - Commercial/Industrial)				-	-	-	-	-	-	-	-	-	-	-	-	-	700	1000	2500 -3500	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
S2-TP8	0-0.2	5/12/2019	**Fill**	<4	<0.4	3	7	0.5	<1	48	30	<0.1	0.1	<0.5	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP8	0.8-1.0	5/12/2019	**Natural**	<4	<0.4	2	6	0.3	<1	42	30	<0.1	0.3	<0.5	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP8	2.5-2.7	5/12/2019	**Natural**	<4	<0.4	6	<1	<0.1	<1	5	14	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP12	0.0-0.2	5/12/2019	**Fill**	<4	<0.4	2	7	<0.1	1	41	64	<0.1	1.2	1.8	11	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	**2.5**	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP12	0.3-0.5	5/12/2019	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP12	0.8-1.0	5/12/2019	**Natural**	<4	<0.4	3	1	<0.1	1	10	17	<0.1	0.2	<0.5	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP13	0.5-0.7	5/12/2019	**Fill**	<4	<0.4	1	3	<0.1	<1	23	57	<0.1	0.2	<0.5	1.2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP19	0.2	5/12/2019	**Fill**	<4	<0.4	8	4	<0.1	3	9	18	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
S2-TP19	0.4-0.6	5/12/2019	**Fill**	<4	<0.4	3	11	<0.1	2	86	81	<0.1	<0.05	<0.5	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP20	0-0.2	5/12/2019	**Fill**	<4	<0.4	9	4	<0.1	3	9	21	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP20	0.3-0.5	5/12/2019	**Fill**	<4	<0.4	4	12	<0.1	1	56	59	<0.1	0.08	<0.5	0.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP21	0-0.2	5/12/2019	**Fill**	<4	<0.4	7	3	<0.1	2	9	19	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
BD2/2019 1210	0-0.2	5/12/2019	**Fill**	<4	<0.4	4	18	0.2	2	130	100	<0.1	0.5	0.8	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP21	0.3-0.5	5/12/2019	**Fill**	<4	<0.4	2	11	<0.1	2	130	140	<0.1	0.1	<0.5	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP22	0-0.2	5/12/2019	**Fill**	<4	<0.4	5	4	<0.1	1	16	26	<0.1	0.2	<0.5	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP22	0.3-0.5	5/12/2019	**Fill**	<4	<0.4	3	8	<0.1	1	48	78	<0.1	0.06	<0.5	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP23	0-0.2	5/12/2019	**Fill**	<4	<0.4	4	7	<0.1	2	35	39	<0.1	0.05	<0.5	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP23	0.3-0.5	5/12/2019	**Fill**	<4	<0.4	4	16	0.2	2	110	370	<0.1	0.2	<0.5	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP23	0.8-1.0	5/12/2019	**Fill**	<4	<0.4	4	15	<0.1	2	55	94	<0.1	0.1	<0.5	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP24	0-0.2	5/12/2019	**Fill**	<4	<0.4	6	4	<0.1	2	10	17	<0.1	0.1	<0.5	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	<0.001	-	-	-
S2-TP24	0.5-0.7	5/12/2019	**Fill**	<4	<0.4	4	9	<0.1	2	89	110	<0.1	0.2	<0.5	1.6	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP24	1.1-1.3	5/12/2019	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP25	0-0.2	5/12/2019	**Fill**	<4	<0.4	6	4	<0.1	2	12	23	<0.1	0.1	<0.5	1.1	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP25	0.3-0.5	5/12/2019	**Fill**	<4	<0.4	3	7	<0.1	1	50	44	<0.1	0.06	<0.5	0.2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP25	0-0.2	5/12/2019	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP26	0.3	5/12/2019	**Fill**	<4	<0.4	6	4	<0.1	2	8	22	<0.1	0.1	<0.5	0.80	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	<0.1	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.001	-	-	-
S2-TP26	0-0.2	5/12/2019	**Fill**	<4	<0.4	4	7	<0.1	1	23	43	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP28	0.02	5/12/2019	**Fill**	<4	<0.4	4	16	<0.1	1	8	10	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP28	0.6-0.8	5/12/2019	**Natural**	<4	<0.4	2	<1	<0.1	<1	2	6	<0.1	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DSI (DP 2019a)																																										
TP301	0.5-0.6	21/11/2018	Fill	<4	<0.4	3	5	18	<0.1	2	62	<1	0.07	<0.5	0.3	-	<25	<25	<100	<100	<25	<50	<0.2	<0.5	<1	<2	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP302	0.5-0.6	21/11/2018	Fill	<4	<0.4	4	17	110	0.1	3	230	<1	4.4	6.3	47	<5	<25	<25	180	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.5	NAD	-	-	-	-
TP302	1.4-1.5	21/11/2018	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP303	0.2-0.3	21/11/2018	Fill	<4	<0.4	3	6	33	<0.1	2	53	<1	0.1	<0.5	0.56	<5	<25	<25	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.5	NAD	-	-	-	-
TP303	0.5-0.6	21/11/2018	Fill	<4	<0.4	1	<1	2	<0.1	<1	3	<1	<0.05	<0.5	<0.05	-	<25	<25	<100	<100	<25	<50	<0.2	<0.5	<1	<2	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP303	0.9-1.0	21/11/2018	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample ID	Depth	Sampling Date	Soil Type*	Metals								PAH				Phenols	TRH						BTEX				Organochlorine Pesticides (OCP)										OPP	PCB	Asbestos		VOC		
				Arsenic	Cadmium	Chromium (VI)[b]	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a) Pyrene (BaP)	BaP TEQ	Total PAH	Total Phenols	TRH C_6-C_{10}	TRH >C_{10}-C_{16}	C_{16}-C_{34} (F3)	C_{34}-C_{40} (F4)	C6 - C10 less BTEX (F1)	C_{10}-C_{16} less Naphthalene (F2)	Benzene	Toluene	Ethylbenzene	Total xylenes	DDT + DDD + DDE	Aldrin and Dieldrin	Chlordane	Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyrifos	Total PCB	Asbestos ID	AF/FA	Total Positive VOC	Ammonia	Explosives (Nitroamides, Nitrobenzenes, Nitrates)
	Practical Quantitation Limit (PQL)			4	0.4	1	1	1	0.1	1	1	0.1	0.05	0.5	0.05	5[d]	25	50	100	100	25	50	0.2	0.5	1	3	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1g/kg	0.001 % w/w	1	0.5	c
Site Assessment Criteria (SAC)																																									
HIL B & HSL B (direct contact)				500	150	500	30000	1200	120	1200	60000	2200	-	4	400	130	5600	4200	5800	8100	-	-	140	21000	5900	17000	600	10	90	400	20	10	15	500	340	1	-		-	-	-
HIL D & HSL D (direct contact)				3000	900	3600	240,000	1500	730	6000	400000	11000	-	40	4000	660	26000	20000	27000	28000	-	-	430	99000	27000	81000	3600	45	530	2000	100	50	80	2500	2000	7	-		-	-	-
HSL A&B - vapour intrusion (Sand)				-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
HSL D -vapour intrusion (Sand)				-	-	-	-	-	-	-	-	NL	-	-	-	-	-	-	-	-	260	NL	3	NL	NL	NL	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
EIL (Res/Open Space , coarse)				100	-	470	65	1100	-	9	240	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
EIL (Commercial/Industrial, coarse)				160	-	770	80	1800	-	10	300	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640[e]	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Urban Res)				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	300	2800	180	120	50	85	70	105	-	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Commercial/Industrial)				-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	1700	3300	215	170	75	135	165	180	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Management Limits (Res, Parkland - Commercial/Industrial)				-	-	-	-	-	-	-	-	-	-	-	-	-	700	1000	2500 -3500	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
TP304	0.5-0.6	21/11/2018	Fill	<4	<0.4	1	<1	1	<0.1	<1	4	<1	<0.05	<0.5	<0.05	-	<25	<25	<100	<100	<25	<50	<0.2	<0.5	<1	<2	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP304	0.9-1.0	21/11/2018	Fill	<4	<0.4	4	8	93	0.3	1	45	<1	0.4	0.7	4.9	<5	<25	<25	<100	<100	<25	<50	<0.2	<0.5	<1	<2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	NAD	-	-	-	-
TP308A	0.0-0.2	13/02/2019	Fill	<4	<0.4	1	1	8	<0.1	<1	2	<1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP309A	0.0-0.2	12/02/2019	Fill	<4	0.4	4	7	45	<0.1	1	72	<1	2.1	2.8	15	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.1	0.2	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.5	NAD	-	-	-	-
BD1/20190212	0.0-0.2	12/02/2019	Fill	<4	<0.4	4	26	51	<0.1	2	110	<1	1.9	2.7	17	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP309A	0.5-0.6	12/02/2019	Fill	<4	<0.4	3	9	24	<0.1	1	61	<1	0.76	1.1	5.3	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP313A	0.0-0.2	13/02/2019	Fill	<4	<0.4	<1	<1	<1	<0.1	<1	4	<1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP314	0.0-0.2	13/02/2019	Fill	<4	<0.4	3	6	22	<0.1	1	28	<1	0.55	0.8	4.2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	NAD	-	-	-	-
TP317	0.0-0.2	11/02/2019	Fill	<4	<0.4	4	14	60	<0.1	2	65	<1	1	1.4	8.6	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	NAD	-	-	-	-
BD1/20190211[a]	0.0-0.2	11/02/2019	Fill	<4	<0.4	5	18	180	<0.1	3	92	<1	2.2	3	22	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP317	0.5-0.6	13/02/2019	Fill	<4	<0.4	1	<1	1	<0.1	<1	3	<1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP318	0.0-0.2	11/02/2019	Fill	<4	<0.4	3	6	43	<0.1	1	63	<1	1.4	1.9	12	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**YES ****	-	-	-	-
TP318	0.4-0.5	11/02/2019	Fill	<4	<0.4	2	6	42	<0.1	1	57	<1	0.9	1.3	8.8		<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP327	0.0-0.2	12/02/2019	Fill	<4	<0.4	2	1	7	<0.1	<1	21	<1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.1	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
TP327	0.6-0.7	12/02/2019	Fill	<4	<0.4	1	<1	1	<0.1	<1	2	<1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP328	0.0-0.2	13/02/2019	Fill	<4	<0.4	2	5	35	<0.1	<1	47	<1	0.05	<0.5	0.2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.2	0.3	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BD2/20190211[a]	0.0-0.2	13/02/2019	Fill	<4	<0.4	3	8	58	<0.1	2	76	<1	0.98	1.4	7.7	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP328	0.5-0.6	12/02/2019	Fill	<4	<0.4	2	1	30	<0.1	<1	18	<1	0.06	<0.5	0.3	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
TP329	0.1-0.2	12/02/2019	Fill	<4	<0.4	3	29	320	0.1	2	120	<1	0.2	<0.5	2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**YES ****	-	-	-	-
TP329	0.6-0.7	12/02/2019	Fill	<4	<0.4	2	10	110	<0.1	<1	56	<1	0.2	<0.5	1.4	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
TP329	0.8-0.9	12/02/2019	Natural Sand	<4	<0.4	<1	<1	2	<0.1	<1	3	<1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH202	0.9-1.0	26/06/2018	Fill	<4	<0.4	<1	4	16	<0.1	<1	51	<0.1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH204	0.3-0.4	27/06/2018	Fill	<4	<0.4	2	7	30	<0.1	1	26	<0.1	0.2	<0.5	1.6	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	NAD	-	-	-	-
BH206	0.3-0.4	25/06/2018	Fill	<4	<0.4	4	13	140	0.1	2	49	<0.1	1.7	2.5	16	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	1.6	NAD	-	-	-	-
BH207	0.1-0.2	25/06/2018	Fill	<4	<0.4	4	12	98	<0.1	2	93	<0.1	1.2	1.7	17	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH209	0.1-0.2	26/06/2018	Fill	<4	0.5	9	32	350	0.1	4	130	<0.1	1.4	2	13	-	<25	<50	120	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH209	0.3-0.4	26/06/2018	Fill	<4	<0.4	5	19	180	<0.1	2	84	<0.1	0.57	0.8	5.4	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	NAD	-	-	-	-
BH210	0.2-0.3	26/06/2018	Fill	<4	1	5	35	130	0.1	3	150	<0.1	1.5	2.2	16	<5	<25	<50	160	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	NAD	-	-	-	-
BH211	0.1-0.2	26/06/2018	Fill	<4	0.4	8	29	130	0.2	5	160	<0.1	0.2	<0.5	2.4	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH211	0.4-0.5	26/06/2018	Fill	<4	<0.4	5	20	130	0.3	3	140	<0.1	0.3	<0.5	3.1	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH212	0.4-0.5	26/06/2018	Fill	<4	<0.4	2	1	4	<0.1	1	9	<0.1	<0.05	<0.5	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH213	0.1-0.2	26/06/2018	Fill	<4	<0.4	4	25	150	0.2	2	300	<0.1	0.3	<0.5	3.7	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH213	0.3-0.4	26/06/2018	Fill	<4	<0.4	4	23	130	0.1	3	170	<0.1	0.2	<0.5	2.2	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<3	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
TP1	0.3-0.4	07/08/2018	Fill	-	-	-	-	47	-	-	-	<0.1	0.1	<0.5	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	1.1-1.2	07/08/2018	Natural Sand	-	-	-	-	1	-	-	-	<0.1	<0.1	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	0-0.1	07/08/2018	Fill	-	-	-	-	91	-	-	-	<0.1	<0.1	<0.5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	1.3-1.4	07/08/2018	Natural Sand	-	-	-	-	<1	-	-	-	<0.1	<0.1	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample ID	Depth	Sampling Date	Soil Type*	Metals								PAH				Phenols	TRH						BTEX				Organochlorine Pesticides (OCP)											OPP	PCB	Asbestos		VOC		
				Arsenic	Cadmium	Chromium (VI)[b]	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a) Pyrene (BaP)	BaP TEQ	Total PAH	Total Phenols	TRH C_6-C_{10}	TRH >C_{10}-C_{16}	C_{16}-C_{34} (F3)	C_{34}-C_{40} (F4)	C6 - C10 less BTEX (F1)	C_{10}-C_{16} less Naphthalene (F2)	Benzene	Toluene	Ethylbenzene	Total xylenes	DDT + DDD + DDE	Aldrin and Dieldrin	Chlordane	Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyrifos	Total PCB	Asbestos ID	AF / FA	Total Positive VOC	Ammonia	Explosives (Nitroamides, Nitrobenzenes, Nitrates)
	Practical Quantitation Limit (PQL)			4	0.4	1	1	1	0.1	1	1	0.1	0.05	0.5	0.05	5[d]	25	50	100	100	25	50	0.2	0.5	1	3	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1g/kg	0.001 % w/w	1	0.5	c
Site Assessment Criteria (SAC)																																										
HIL B & HSL B (direct contact)				500	150	500	30000	1200	120	1200	60000	2200	-	4	400	130	5600	4200	5800	8100	-	-	140	21000	5900	17000	600	10	90	400	20	10	15	500	340	1	-		-	-	-
HIL D & HSL D (direct contact)				3000	900	3600	240,000	1500	730	6000	400000	11000	-	40	4000	660	26000	20000	27000	28000	-	-	430	99000	27000	81000	3600	45	530	2000	100	50	80	2500	2000	7	-		-	-	-
HSL A&B - vapour intrusion (Sand)				-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
HSL D -vapour intrusion (Sand)				-	-	-	-	-	-	-	-	NL	-	-	-	-	-	-	-	-	260	NL	3	NL	NL	NL	-	-	-	-	-	-	-	-	-	-	NAD		<PQL	-	<PQL
EIL (Res/Open Space , coarse)				100	-	470	65	1100	-	9	240	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180 [e]	-	-	-	-	-	-	-	-	-	-		-	-	-
EIL (Commercial/Industrial, coarse)				160	-	770	80	1800	-	10	300	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640 [e]	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Urban Res)				-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	300	2800	180	120	50	85	70	105	-	-	-	-	-	-	-	-	-	-	-		-	-	-
ESL (Commercial/Industrial)				-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	1700	3300	215	170	75	135	165	180	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Management Limits (Res, Parkland - Commercial/Industrial)				-	-	-	-	-	-	-	-	-	-	-	-	-	700	1000	2500 -3500	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
TP4	0.4-0.5	07/08/2018	Fill	-	-	-	-	180	-	-	-	<0.1	1.5	2.1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD2/20180807 [a]		07/08/2018	Fill	-	-	-	-	220	-	-	-	<0.1	0.3	0.5	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4	0.6-0.7	07/08/2018	Natural Sand	-	-	-	-	<1	-	-	-	<0.1	<0.1	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	0.1-0.2	07/08/2018	Fill	-	-	-	-	140	-	-	-	<0.1	0.5	0.9	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	0.9-1.0	07/08/2018	Natural	-	-	-	-	14	-	-	-	<0.1	<0.1	<0.5	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSI (DP 2018)																																										
BH3	0.1-0.2	21/09/2017	Fill	<4	<0.4	46	63	7	<0.1	79	42	<0.1	<0.05	<0.172	0.1	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH3	0.7-0.8	21/09/2017	Fill	<4	<0.4	1	4	29	<0.1	1	24	<0.1	0.1	0.1	0.3	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH3	1.3-1.43	21/09/2017	Natural Sand	<4	<0.4	<1	3	6	<0.1	<1	3	<0.1	<0.05	<0.172	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH4	0.07-0.15	18/09/2017	Roadbase	<4	<0.4	<1	100	1	<0.1	3	10	<1 - 0.4	57.0	77.0	740.0	<5	<25	170	6600	1300	<25	170	<0.2	<0.5	<1	<1	<1	<2	<2	<3	<1	<1	<1	<1	<1	<1	NAD	-	-	-	-
BH4	0.5-0.6	18/09/2017	Fill	<4	<0.4	3	2	10	<0.1	2	10	<0.1	0.5	0.6	4.5	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH101	0.5-0.7	9/01/2018	Fill	<4	<0.4	4	5	34	0.1	<1	30	<0.1	0.1	0.2	0.9	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH101	1.4-1.6	9/01/2018	Natural Sand	<4	<0.4	9	<1	4	<0.1	2	22	<0.1	<0.05	<0.172	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH109	0-0.2	9/01/2018	Fill	<4	<0.4	8	28	240	<0.1	6	200	<0.1	0.8	1.0	7.3	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	NAD	-	-	-	-
BH109	0.6-0.7	23/01/2018	Fill	<4	<0.4	<1	1	8	<0.1	<1	6	<0.1	<0.05	<0.172	<0.05	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH109	1.4-1.5	23/01/2018	Fill	<4	<0.4	<1	<1	<1	<0.1	<1	<1	<0.1	<0.05	<0.172	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH110	0-0.2	9/01/2018	Fill	5	<0.4	26	43	77	0.1	26	210	<0.1	1.4	1.8	13.0	-	<25	<50	160	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH110	0.5-0.7	9/01/2018	Natural Sand	5	<0.4	6	12	53	0.2	2	170	<0.1	0.2	0.3	2.8	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH111	0-0.2	10/01/2018	Fill	7	0.8	18	50	470	0.2	5	390	<1 - 0.3	6.4	8.2	61.0	<5	<25	<50	480	140	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	NAD	-	-	-	-
BH112	0-0.2	10/01/2018	Natural Sand	6	2	20	110	440	0.2	5	230	<0.1	0.5	0.6	4.2	<5	<25	<50	110	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	NAD	-	-	-	-
BH112	0.6-0.7	10/01/2018	Fill	<4	<0.4	1	4	8	<0.1	<1	58	<0.1	<0.05	<0.172	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH113	0.1-0.3	10/01/2018	Fill	<4	<0.4	2	7	28	<0.1	<1	31	<0.1	0.2	0.3	2.1	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH113	0.5-0.7	10/01/2018	Natural Sand	<4	<0.4	14	37	350	0.1	4	130	<0.1	1.2	1.6	11.0	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH119	0.5-0.6	10/01/2018	Fill	<4	<0.4	6	12	100	<0.1	3	72	<0.1	0.3	0.4	2.5	<5	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
BH119	1-1.1	10/01/2018	Natural Sand	<4	<0.4	2	4	13	<0.1	1	12	<0.1	<0.05	<0.172	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	NAD	-	-	-	-
BH120	0-0.1	10/01/2018	Fill	13	<0.4	13	35	21	0.2	4	85	<0.1	0.1	0.1	0.3	<5	<25	<50	210	100	<25	<50	<0.2	<0.5	<1	<1	<0.1	<0.2	<0.2	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-	-	-
IASB DSI (2019)																																										
TP406	0.55-0.65	24/08/2019	Natural Sand	<4	<0.4	2	<1	1	<0.1	1	2	<0.1	<0.05	<0.5	<0.05	-	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

<PQL	Concentration comprises of sum of a number of individual analytes. All individual analytes below reported PQL
a	Replicate of sample directly below
b	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable under the normal environment
c	Refer to laboratory reports for individual quantification limits for the explosive compounds

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Table C2 - Groundwater results

		Metals								TRH		MAH						VOCs																PAH		Phenols
		Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	F2-NAPHTHALENE	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (m&p)	Xylene (o)	Styrene	1,1,2-trichloroethane	1,1-dichloroethene	1,2-dichloroethane	Carbon tetrachloride	Chloroform	Hexachlorobutadiene	Tetrachloroethene	Vinyl chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Benzo(a) pyrene	Naphthalene	Phenol
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL		0.001	0.0001	0.001	0.001	0.001	0.00005	0.001	0.001	0.05	0.01	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0002	0.05
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Sand																																		
2-4m										1	1	0.8	NL	NL																			NL	
ANZG 2018 DGV GILs, Freshwater, slightly to moderately disturbed system		0.024 / 0.042	0.0002	0.0033/ 0.001	0.0014	0.0034	0.00006	0.011	0.008	-	-	0.95	0.08	0.18	0.075 / 0.20	0.35	-	0.0065	-	-	-	-		-	-	0.003	0.085	0.16	0.26	0.06	-	0.0001	0.016	0.0036
Field ID	**Sampled Date**																																	
Current Investigation																																		
BH12	08/09/2020	<0.001	<0.0001	<0.001	<0.002	<0.001	<0.00005	<0.002	<0.001	0.075	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.05
BH608	08/09/2020	<0.001	<0.0001	<0.001	0.009	<0.001	<0.00005	0.006	0.017	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0002	<0.0002	<0.05
BD1/20200908	08/09/2020	<0.001	<0.0001	<0.001	0.001	<0.001	<0.00005	0.005	0.016	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0003	<0.0002	-
DP (2019a)																																		
BH14	12/02/2019	<0.001	0.0006	<0.001	0.007	<0.001	<0.00005	0.002	<0.001	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05
BH10	12/02/2019	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.008	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05
DP (2018b)																																		
BH202		<0.001	0.0001	<0.001	0.002	<0.001	<0.00005	0.005	0.031	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BH204		<0.001	<0.0001	<0.001	0.008	<0.001	<0.00005	0.002	0.028	<0.05	0.039	<0.001	0.001	<0.001	0.009	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BH11		<0.001	<0.0001	<0.001	0.005	<0.001	<0.00005	<0.001	0.013	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BH14		<0.001	0.0001	<0.001	0.007	<0.001	<0.00005	<0.001	0.055	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BH16		<0.001	<0.0001	<0.001	0.012	<0.001	<0.00005	0.001	0.007	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BH17		<0.001	<0.0001	<0.001	0.003	<0.001	<0.00005	<0.001	0.008	0.074	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
BD1/20180706		<0.001	0.0001	<0.001	0.001	<0.001	<0.00005	0.004	0.026	<0.05	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
DP (2018)																																		
BD13102017	13/10/2017	<0.001	<0.0001	<0.001	0.007	<0.001	<0.00005	0.002	0.022	<0.05	0.012	<0.001	<0.001	0.001	<0.002	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0002	<0.05
GW7	13/10/2017	<0.001	<0.0001	<0.001	0.007	<0.001	<0.00005	0.002	0.024	<0.05	0.013	<0.001	<0.001	0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0002	<0.05

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Table B3 - Waste Classification Table (All results in mg/kg unless otherwise stated)

Test Pit/ Sample ID[a]	Sampling Depth	Soil Type	Metals							PAH			Phenols	Total Petroleum Hydrocarbons				BTEX				OCP	OPP	PCB	Asbestos
			Arsenic	Cadmium	Chromium (VI)[b]	Lead	Lead (TCLP)	Mercury	Nickel	Benzo(a) Pyrene (BaP)	BaP (TCLP)	Total PAH	Phenol	C6 - C9	C10 - C14	C15-C28	C29 - C36	Benzene	Toluene	Ethylbenzene	Xylenes	Endosulfan	Chlorpyrifos	PCB *	Asbestos
PQL			4	0.4	1	1	0.03 mg/L	0.1	1	0.05	0.001 mg/L	0.05	5	25	50	100	100	0.2	0.5	1	3	0.3	0.1	0.7	0.1g /kg
Site Assessment Criteria (SAC)																									
NSW EPA (2014) CT1 (mg/kg) General Solid Waste			100	20	100	100	-	4	40	0.8	-	200	288	650	10 000			10	288	600	1000	60	4	<50	NAD
NSW EPA (2014) SCC1 with TCLP			500	100	1900	1500	5	50	1050	10	0.04	200	518	650	10 000			18	518	1080	1800	108		<50	NAD
NSW EPA (2014) CT2 (mg/kg) Restricted Solid Waste			400	80	400	400	-	16	160	3.2	-	800	1152	2600	40 000			40	1152	2400	4000	240	16	<50	NAD
NSW EPA (2014) Restricted Solid Waste with TCLP			2000	400	7600	6000	20	200	4200	23	0.16	800	2073	2600	40 000			72	2073	4320	7200	432	30	<50	NAD
Current Investigation																									
TP601	0.1-0.3	Fill	<4	<0.4	7	10	-	<0.1	3	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
TP601	1.0-1.2	Fill	<4	<0.4	4	79	-	0.8	1	0.2	-	1.9	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
TP602	0.7-0.9	Fill	<4	<0.4	3	96	-	0.1	3	0.96	<0.001	9	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	**YES****
TP603	0.3-0.5	Fill	<4	<0.4	14	3	-	<0.1	19	0.06	-	0.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
TP604	0.2-0.3	Fill	<4	<0.4	3	5	-	<0.1	2	0.5	-	5.8	-	<25	<50	<100	110	<0.2	<0.5	<1	<3	-	-	-	NAD
TP604	0.4-0.5	Fill	<4	<0.4	6	28	-	0.2	5	0.68	-	6.6	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH601	0.4-0.5	Fill	<4	<0.4	27	23	-	<0.1	22	<0.05	-	0.1	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH602	0.4-0.6	Fill	<4	<0.4	3	16	-	<0.1	2	0.09	-	0.53	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH603	0.5-0.7	Fill	<4	<0.4	24	35	-	<0.1	27	0.2	-	1.5	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH603	0.8-1.0	Fill	<4	0.9	5	70	-	0.2	14	0.2	-	2.2	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH604	0.5-0.7	Fill	<4	<0.4	6	39	-	<0.1	6	0.4	-	5.7	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH604	1.0-1.2	Fill	<4	<0.4	7	150	0.3	0.1	6	3.3	<0.001	30	<5	<25	<50	130	140	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH605	0.4-0.5	Fill	<4	<0.4	43	24	-	<0.1	35	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BD1/20200819 [a]	-	Fill	<4	<0.4	35	17	-	<0.1	34	0.07	-	0.4	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	-
BH605	0.9-1.1	Fill	<4	<0.4	3	56	-	0.1	2	0.2	-	1.8	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH606	0.5	Fill	<4	<0.4	2	15	-	<0.1	1	3.4	<0.001	38	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH606	1	Fill	<4	<0.4	1	8	-	<0.1	<1	0.06	-	0.3	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH607	0.5	Fill	<4	<0.4	4	73	-	<0.1	3	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH607	1	Natural Sand	<4	<0.4	1	7	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH608	0.5	Fill	<4	<0.4	2	6	-	<0.1	<1	0.68	-	5.1	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH608	1	Fill	<4	<0.4	3	29	-	0.2	<1	0.5	-	4.5	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH608	2	Natural Sand	<4	<0.4	5	5	-	<0.1	1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
Stage 2 Waste Classification (DP 2019e)																									
S2-TP1	0-0.2	**Fill**	<4	<0.4	3	15	-	<0.1	<1	0.08	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-
BD1 2019 1205	.	**Fill**	<4	<0.4	3	14	-	<0.1	1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP2	0-0.1	**Fill**	<4	<0.4	16	13	-	<0.1	6	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP2	0.1-0.2	**Fill**	<4	<0.4	11	13	-	<0.1	5	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP5	0.4-0.6	**Fill**	<4	<0.4	3	19	-	<0.1	1	0.81	<0.001	8.1	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP6	0-0.2	**Fill**	<4	<0.4	2	31	-	<0.1	<1	1.2	<0.001	19	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP6	0.9-1.0	**Fill**	<4	<0.4	3	39	-	<0.1	1	0.63	-	7.4	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	-
S2-TP12	0.0-0.2	**Fill**	<4	<0.4	2	41	-	<0.1	1	1.2	<0.001	11	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP13	0.5-0.7	**Fill**	<4	<0.4	1	23	-	<0.1	<1	0.2	-	1.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP14	0.3-0.5	**Fill**	<4	<0.4	4	100	-	0.1	2	2.7	<0.001	25	-	-	-	-	-	-	-	-	-	-	-		-
S2-TP19	0.2	**Fill**	<4	<0.4	8	9	-	<0.1	3	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	-
S2-TP19	0.4-0.6	**Fill**	<4	<0.4	3	86	-	<0.1	2	<0.05	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP20	0-0.2	**Fill**	<4	<0.4	9	9	-	<0.1	3	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP20	0.3-0.5	**Fill**	<4	<0.4	4	56	-	<0.1	1	0.08	-	0.52	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP21	0-0.2	**Fill**	<4	<0.4	7	9	-	<0.1	2	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
BD2/2019 1210	0-0.2	**Fill**	<4	<0.4	4	130	0.1	0.2	2	0.5	-	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP21	0.3-0.5	**Fill**	<4	<0.4	2	130	0.07	<0.1	2	0.1	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP22	0-0.2	**Fill**	<4	<0.4	5	16	-	<0.1	1	0.2	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP22	0.3-0.5	**Fill**	<4	<0.4	3	48	-	<0.1	1	0.06	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP23	0-0.2	**Fill**	<4	<0.4	4	35	-	<0.1	2	0.05	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP23	0.3-0.5	**Fill**	<4	<0.4	4	110	0.2	0.2	2	0.2	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP24	0-0.2	**Fill**	<4	<0.4	6	10	-	<0.1	2	0.1	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP24	0.5-0.7	**Fill**	<4	<0.4	4	89	-	<0.1	2	0.2	-	1.6	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP25	0-0.2	**Fill**	<4	<0.4	6	12	-	<0.1	2	0.1	-	1.1	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP25	0.3-0.5	**Fill**	<4	<0.4	3	50	-	<0.1	1	0.06	-	0.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP26	0-0.2	**Fill**	<4	<0.4	6	8	-	<0.1	2	0.1	-	0.80	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.1	<0.1	<0.1	NAD
S2-TP26	0.3	**Fill**	<4	<0.4	4	23	-	<0.1	1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP15	0-0.2	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP5	0-0.2	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP6	0.4-0.6	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP12	0.3-0.5	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP15	0-0.1	**Fill**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD
S2-TP2	1.4-1.5	**Natural**	<4	<0.4	11	4	-	<0.1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP8	0.8-1.0	**Natural**	<4	<0.4	2	42	-	0.3	<1	0.3	-	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP8	2.5-2.7	**Natural**	<4	<0.4	6	5	-	<0.1	<1	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
S2-TP12	0.8-1.0	**Natural**	<4	<0.4	3	10	-	<0.1	1	0.2	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-
DSI (DP 2019a)																									
TP301	0.5-0.6	Fill	<4	<0.4	3	18	-	<0.1	2	0.07	-	0.3	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	-	-	-	NAD
TP302	0.5-0.6	Fill	<4	<0.4	4	110	0.2	0.1	3	4.4	<0.001	47	<5	<25	<50	120	<100	<0.2	<0.5	<1	<2	<0.1	-	<0.5	NAD
TP303	0.2-0.3	Fill	<4	<0.4	3	33	0.1	<0.1	2	0.1	<0.001	0.56	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<0.1	-	<0.5	NAD
TP303	0.5-0.6	Fill	<4	<0.4	1	2	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	-	-	-	NAD
TP303	0.9-1.0	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP304	0.5-0.6	Fill	<4	<0.4	1	1	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	-	-	-	NAD
TP304	0.9-1.0	Fill	<4	<0.4	4	93	<0.03	0.3	1	0.4	<0.001	4.9	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<0.1	-	<0.1	NAD
TP308A	0.0-0.2	Fill	<4	<0.4	1	8	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP309A	0.0-0.2	Fill	<4	0.4	4	45	-	<0.1	1	2.1	-	15	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.5	NAD
BD1/20190212	0.0-0.2	Fill	<4	<0.4	4	51	-	<0.1	2	1.9	-	17	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-
TP309A	0.5-0.6	Fill	<4	<0.4	3	24	-	<0.1	1	0.76	-	5.3	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP310A	0.0-0.2	Fill	<4	<0.4	4	47	-	<0.1	2	0.4	-	3.5	<5	<25	<50	190	270	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
TP310A	0.5-0.6	Fill	<4	<0.4	1	4	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP313A	0.0-0.2	Fill	<4	<0.4	<1	<1	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP314	0.0-0.2	Fill	<4	<0.4	3	22	-	<0.1	1	0.55	-	4.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	-	<0.1	NAD

Test Pit/ Sample ID[a]	Sampling Depth	Soil Type	Metals							PAH			Phenols	Total Petroleum Hydrocarbons				BTEX				OCP	OPP	PCB	Asbestos
			Arsenic	Cadmium	Chromium (VI)[b]	Lead	Lead (TCLP)	Mercury	Nickel	Benzo(a) Pyrene (BaP)	BaP (TCLP)	Total PAH	Phenol	C6 - C9	C10 - C14	C15-C28	C29 - C36	Benzene	Toluene	Ethylbenzene	Xylenes	Endosulfan	Chlorpyrifos	PCB *	Asbestos
TP317	0.0-0.2	Fill	<4	<0.4	4	60	-	<0.1	2	1	-	8.6	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	0.4	NAD
BD1/20190211[a]	0.0-0.2	Fill	<4	<0.4	5	180	-	<0.1	3	2.2	-	22	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-
TP317	0.5-0.6	Fill	<4	<0.4	1	1	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP318	0.0-0.2	Fill	<4	<0.4	3	43	-	<0.1	1	1.4	-	12	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	**YES *****
TP318	0.4-0.5	Fill	<4	<0.4	2	42	-	<0.1	1	0.9	-	8.8		<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP327	0.0-0.2	Fill	<4	<0.4	2	7	-	<0.1	<1	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
TP327	0.6-0.7	Fill	<4	<0.4	1	1	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP328	0.0-0.2	Fill	<4	<0.4	2	35	-	<0.1	<1	0.05	-	0.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BD2/20190211[a]	0.0-0.2	Fill	<4	<0.4	3	58	-	<0.1	2	0.98	-	7.7	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-
TP328	0.5-0.6	Fill	<4	<0.4	2	30	-	<0.1	<1	0.06	-	0.3	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
TP329	0.1-0.2	Fill	<4	<0.4	3	320	-	0.1	2	0.2	-	2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	**YES *****
TP329	0.6-0.7	Fill	<4	<0.4	2	110	-	<0.1	<1	0.2	-	1.4	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
TP329	0.8-0.9	Natural	<4	<0.4	<1	2	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-
TP1	0.3-0.4	Fill	-	-	-	47	-	-	-	0.1	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	1.1-1.2	Natural Sand	-	-	-	1	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	0-0.1	Fill	-	-	-	91	-	-	-	0.1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	1.3-1.4	Natural Sand	-	-	-	<1	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	0.1-0.2	Fill	-	-	-	22	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	1.0-1.1	Natural Sand	-	-	-	<1	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4	0.4-0.5	Fill	-	-	-	180	-	-	-	1.5	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-
BD2/20180807	-	Fill	-	-	-	220	-	-	-	0.4	-	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4	0.6-0.7	Natural Sand	-	-	-	<1	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	0.1-0.2	Fill	-	-	-	140	-	-	-	0.5	-	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	0.9-1.0	Natural	-	-	-	14	-	-	-	<0.1	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
BH202	0.3-0.4	Fill	<4	<0.4	3	110	0.1	<0.1	2	0.8	-	7	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH202	0.9-1.0	Fill	<4	<0.4	<1	16	-	<0.1	<1	<0.05	-	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH204	0.3-0.4	Fill	<4	<0.4	2	30	-	<0.1	1	0.2	-	1.6	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	0.4	NAD
BH206	0.3-0.4	Fill	<4	<0.4	4	140	0.1	0.1	2	1.7	<0.001	16	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	1.6	NAD
BH207	0.1-0.2	Fill	<4	<0.4	4	98	-	<0.1	2	1.2	<0.001	17	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH209	0.1-0.2	Fill	<4	0.5	9	350	0.1	0.1	4	1.4	<0.001	13	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH209	0.3-0.4	Fill	<4	<0.4	5	180	-	<0.1	2	0.57	-	5.4	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.2	NAD
BH210	0.2-0.3	Fill	<4	1	5	130	0.1	0.1	3	1.5	<0.001	16	<5	<25	<50	110	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.5	NAD
BH211	0.1-0.2	Fill	<4	0.4	8	130	0.1	0.2	5	0.2	-	2.4	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH211	0.4-0.5	Fill	<4	<0.4	5	130	0.1	0.3	3	0.3	-	3.1	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH212	0.4-0.5	Fill	<4	<0.4	2	4	-	<0.1	1	<0.05	-	<0.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
BH213	0.1-0.2	Fill	<4	<0.4	4	150	0.1	0.2	2	0.3	-	3.7	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	-	-	-	NAD
BH213	0.3-0.4	Fill	<4	<0.4	4	130	0.1	0.1	3	0.2	-	2.2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.3	<0.1	<0.1	NAD
PSI (DP 2018)																									
BH3	0.1-0.2	Fill	<4	<0.4	46	7	-	<0.1	79	<0.05	-	0.725	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH3	0.7-0.8	Fill	<4	<0.4	1	29	-	<0.1	1	0.07	-	0.82	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH3	1.3-1.43	Natural Sand	<4	<0.4	<1	6	-	<0.1	<1	<0.05	-	<1.35	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH4	0.07-0.15	Roadbase	<4	<0.4	<1	1	-	<0.1	3	57	<0.001	634.3	<5	<25	66	4400	3000	<0.2	<0.5	<1	<1	<1	<1	<1	NAD
BH101	0.5-0.7	Fill	<4	<0.4	4	34	-	0.1	<1	0.1	-	1.15	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH101	1.4-1.6	Natural Sand	<4	<0.4	9	4	-	<0.1	2	<0.05	-	<1.35	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
BH109	0-0.2	Fill	<4	<0.4	3	230	<0.03	<0.1	2	0.54	<0.001	3.79	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
BH110	0-0.2	Fill	<4	<0.4	8	240	-	<0.1	6	0.78	<0.001	6.18	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	0.2	NAD
BH110	0.5-0.7	Natural Sand	<4	0.5	6	280	-	0.2	4	1.5	-	12.05	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH111	0-0.2	Fill	7	0.8	18	470	0.3	0.2	5	6.4	<0.001	50.75	<5	<25	<50	280	260	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.5	NAD
BH112	0-0.2	Natural Sand	6	2	20	440	0.1	0.2	5	0.5	<0.001	3.8	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	0.2	NAD
BH112	0.6-0.7	Fill	<4	<0.4	1	8	-	<0.1	<1	<0.05	-	<1.35	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
BH113	0.1-0.3	Fill	<4	<0.4	2	28	-	<0.1	<1	0.2	-	2	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH113	0.5-0.7	Natural Sand	<4	<0.4	14	350	0.2	0.1	4	1.2	<0.001	9.35	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
BH119	0.5-0.6	Fill	<4	<0.4	6	100	0.08	<0.1	3	0.3	-	2.4	<5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD
BH119	1-1.1	Natural Sand	<4	<0.4	2	13	-	<0.1	1	<0.05	-	<1.35	-	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	NAD
BH120	0-0.1	Fill	13	<0.4	13	21	-	0.2	4	0.07	-	0.82	<5	<25	<50	<100	180	<0.2	<0.5	<1	<1	<0.1	<0.1	<0.1	NAD

Notes

NSW EPA (2014) Waste Classification Guidelines - Part 1: Classifying Waste

[a] Duplicate sample is listed below primary sample

NAD Not detected at the laboratory reporting limit of 0.1g/kg

* PCBs must be managed in accordance with the EPA's PCB Chemical Control Order 1997.

** Asbestos detected below the laboratory limit of reporting

*** Suspected asbestos detected during field screening (DP 2019a)

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.115/10/2020 10:34:36 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

B(a)P

General Statistics

Total Number of Observations	118	Number of Distinct Observations	35
		Number of Missing Observations	2
Minimum	0.05	Mean	0.514
Maximum	6.4	Median	0.1
SD	0.926	Std. Error of Mean	0.0852
Coefficient of Variation	1.801	Skewness	3.627

Normal GOF Test

Shapiro Wilk Test Statistic	0.568	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.308	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0819	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.655	95% Adjusted-CLT UCL (Chen-1995)	0.685
		95% Modified-t UCL (Johnson-1978)	0.66

Gamma GOF Test

A-D Test Statistic	8.127	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.809	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.233	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.089	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.607	k star (bias corrected MLE)	0.597
Theta hat (MLE)	0.847	Theta star (bias corrected MLE)	0.861
nu hat (MLE)	143.3	nu star (bias corrected)	141
MLE Mean (bias corrected)	0.514	MLE Sd (bias corrected)	0.665
		Approximate Chi Square Value (0.05)	114.5
Adjusted Level of Significance	0.048	Adjusted Chi Square Value	114.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.633	95% Adjusted Gamma UCL (use when n<50)	0.634

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.202	**Lilliefors Lognormal GOF Test**

55	5% Lilliefors Critical Value					0.0819	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					-2.996	Mean of logged Data					-1.682
60	Maximum of Logged Data					1.856	SD of logged Data					1.358
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					0.647	90% Chebyshev (MVUE) UCL					0.693
64	95% Chebyshev (MVUE) UCL					0.798	97.5% Chebyshev (MVUE) UCL					0.944
65	99% Chebyshev (MVUE) UCL					1.23						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					0.654	95% Jackknife UCL					0.655
72	95% Standard Bootstrap UCL					0.653	95% Bootstrap-t UCL					0.708
73	95% Hall's Bootstrap UCL					0.715	95% Percentile Bootstrap UCL					0.659
74	95% BCA Bootstrap UCL					0.685						
75	90% Chebyshev(Mean, Sd) UCL					0.77	95% Chebyshev(Mean, Sd) UCL					0.886
76	97.5% Chebyshev(Mean, Sd) UCL					1.046	99% Chebyshev(Mean, Sd) UCL					1.362
77												
78	**Suggested UCL to Use**											
79	95% Chebyshev (Mean, Sd) UCL					0.886						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												
86												
87	**B(a)P TEQ**											
88												
89	**General Statistics**											
90	Total Number of Observations					118	Number of Distinct Observations					31
91							Number of Missing Observations					2
92	Minimum					0.131	Mean					0.922
93	Maximum					8.197	Median					0.5
94	SD					1.156	Std. Error of Mean					0.106
95	Coefficient of Variation					1.254	Skewness					3.905
96												
97	**Normal GOF Test**											
98	Shapiro Wilk Test Statistic					0.512	**Shapiro Wilk GOF Test**					
99	5% Shapiro Wilk P Value					0	Data Not Normal at 5% Significance Level					
100	Lilliefors Test Statistic					0.337	**Lilliefors GOF Test**					
101	5% Lilliefors Critical Value					0.0819	Data Not Normal at 5% Significance Level					
102	**Data Not Normal at 5% Significance Level**											
103												
104	**Assuming Normal Distribution**											
105	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
106	95% Student's-t UCL					1.098	95% Adjusted-CLT UCL (Chen-1995)					1.138
107							95% Modified-t UCL (Johnson-1978)					1.105
108												

109	**Gamma GOF Test**											
110					A-D Test Statistic	15.37	**Anderson-Darling Gamma GOF Test**					
111					5% A-D Critical Value	0.769	Data Not Gamma Distributed at 5% Significance Level					
112					K-S Test Statistic	0.358	**Kolmogorov-Smirnov Gamma GOF Test**					
113					5% K-S Critical Value	0.0863	Data Not Gamma Distributed at 5% Significance Level					
114	**Data Not Gamma Distributed at 5% Significance Level**											
115												
116	**Gamma Statistics**											
117					k hat (MLE)	1.585	k star (bias corrected MLE)					1.55
118					Theta hat (MLE)	0.582	Theta star (bias corrected MLE)					0.595
119					nu hat (MLE)	374.1	nu star (bias corrected)					365.9
120					MLE Mean (bias corrected)	0.922	MLE Sd (bias corrected)					0.74
121							Approximate Chi Square Value (0.05)					322.6
122					Adjusted Level of Significance	0.048	Adjusted Chi Square Value					322.1
123												
124	**Assuming Gamma Distribution**											
125				95% Approximate Gamma UCL (use when n>=50))		1.046	95% Adjusted Gamma UCL (use when n<50)					1.047
126												
127	**Lognormal GOF Test**											
128					Shapiro Wilk Test Statistic	0.787	**Shapiro Wilk Lognormal GOF Test**					
129					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
130					Lilliefors Test Statistic	0.337	**Lilliefors Lognormal GOF Test**					
131					5% Lilliefors Critical Value	0.0819	Data Not Lognormal at 5% Significance Level					
132	**Data Not Lognormal at 5% Significance Level**											
133												
134	**Lognormal Statistics**											
135					Minimum of Logged Data	-2.033	Mean of logged Data					-0.429
136					Maximum of Logged Data	2.104	SD of logged Data					0.728
137												
138	**Assuming Lognormal Distribution**											
139					95% H-UCL	0.97	90% Chebyshev (MVUE) UCL					1.036
140					95% Chebyshev (MVUE) UCL	1.121	97.5% Chebyshev (MVUE) UCL					1.241
141					99% Chebyshev (MVUE) UCL	1.475						
142												
143	**Nonparametric Distribution Free UCL Statistics**											
144	**Data do not follow a Discernible Distribution (0.05)**											
145												
146	**Nonparametric Distribution Free UCLs**											
147					95% CLT UCL	1.097	95% Jackknife UCL					1.098
148					95% Standard Bootstrap UCL	1.092	95% Bootstrap-t UCL					1.175
149					95% Hall's Bootstrap UCL	1.164	95% Percentile Bootstrap UCL					1.114
150					95% BCA Bootstrap UCL	1.142						
151					90% Chebyshev(Mean, Sd) UCL	1.241	95% Chebyshev(Mean, Sd) UCL					1.386
152					97.5% Chebyshev(Mean, Sd) UCL	1.586	99% Chebyshev(Mean, Sd) UCL					1.981
153												
154	**Suggested UCL to Use**											
155					95% Chebyshev (Mean, Sd) UCL	1.386						
156												
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
158	Recommendations are based upon data size, data distribution, and skewness.											
159	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
160	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
161												
162												

163	**Total PCBs**											
164												
165	**General Statistics**											
166						Total Number of Observations	55				Number of Distinct Observations	5	
167											Number of Missing Observations	0
168						Minimum	0.1				Mean	0.178
169						Maximum	1.6				Median	0.1
170						SD	0.232				Std. Error of Mean	0.0313
171						Coefficient of Variation	1.304				Skewness	4.663
172												
173	**Normal GOF Test**											
174						Shapiro Wilk Test Statistic	0.396	**Shapiro Wilk GOF Test**				
175						5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level				
176						Lilliefors Test Statistic	0.45	**Lilliefors GOF Test**				
177						5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level				
178	**Data Not Normal at 5% Significance Level**											
179												
180	**Assuming Normal Distribution**											
181					**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**		
182						95% Student's-t UCL	0.231				95% Adjusted-CLT UCL (Chen-1995)	0.251
183											95% Modified-t UCL (Johnson-1978)	0.234
184												
185	**Gamma GOF Test**											
186						A-D Test Statistic	13.64	**Anderson-Darling Gamma GOF Test**				
187						5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level				
188						K-S Test Statistic	0.489	**Kolmogorov-Smirnov Gamma GOF Test**				
189						5% K-S Critical Value	0.122	Data Not Gamma Distributed at 5% Significance Level				
190	**Data Not Gamma Distributed at 5% Significance Level**											
191												
192	**Gamma Statistics**											
193						k hat (MLE)	1.786				k star (bias corrected MLE)	1.701
194						Theta hat (MLE)	0.0997				Theta star (bias corrected MLE)	0.105
195						nu hat (MLE)	196.5				nu star (bias corrected)	187.1
196						MLE Mean (bias corrected)	0.178				MLE Sd (bias corrected)	0.137
197											Approximate Chi Square Value (0.05)	156.5
198						Adjusted Level of Significance	0.0456				Adjusted Chi Square Value	155.7
199												
200	**Assuming Gamma Distribution**											
201						95% Approximate Gamma UCL (use when n>=50))	0.213				95% Adjusted Gamma UCL (use when n<50)	0.214
202												
203	**Lognormal GOF Test**											
204						Shapiro Wilk Test Statistic	0.496	**Shapiro Wilk Lognormal GOF Test**				
205						5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level				
206						Lilliefors Test Statistic	0.486	**Lilliefors Lognormal GOF Test**				
207						5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level				
208	**Data Not Lognormal at 5% Significance Level**											
209												
210	**Lognormal Statistics**											
211						Minimum of Logged Data	-2.303				Mean of logged Data	-2.03
212						Maximum of Logged Data	0.47				SD of logged Data	0.629
213												
214	**Assuming Lognormal Distribution**											
215						95% H-UCL	0.189				90% Chebyshev (MVUE) UCL	0.203
216						95% Chebyshev (MVUE) UCL	0.223				97.5% Chebyshev (MVUE) UCL	0.25

	A	B	C	D	E	F	G	H	I	J	K	L
217					99% Chebyshev (MVUE) UCL	0.304						
218												
219					**Nonparametric Distribution Free UCL Statistics**							
220					**Data do not follow a Discernible Distribution (0.05)**							
221												
222					**Nonparametric Distribution Free UCLs**							
223					95% CLT UCL	0.23				95% Jackknife UCL		0.231
224					95% Standard Bootstrap UCL	0.232				95% Bootstrap-t UCL		0.283
225					95% Hall's Bootstrap UCL	0.42				95% Percentile Bootstrap UCL		0.235
226					95% BCA Bootstrap UCL	0.256						
227					90% Chebyshev(Mean, Sd) UCL	0.272				95% Chebyshev(Mean, Sd) UCL		0.315
228					97.5% Chebyshev(Mean, Sd) UCL	0.374				99% Chebyshev(Mean, Sd) UCL		0.49
229												
230					**Suggested UCL to Use**							
231					95% Chebyshev (Mean, Sd) UCL	0.315						
232												
233	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
234	Recommendations are based upon data size, data distribution, and skewness.											
235	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
236	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
237												

Appendix D

QA / QC

QA / QC PROCEDURES AND RESULTS

Q1. Data Quality Objectives

Q1.1 Introduction

The validation design is broadly in accordance with the seven step Data Quality Objective (DQO) process which is provided in Appendix B, Schedule B2 of the National Environment Protection Measure 199, as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

Q1.1.1 State the Problem

The problem to be addressed is that the suitability of the SCH / CCCC area (the site) for the proposed hospital land-use is currently unknown. The preliminary site investigation and previous intrusive investigations within the larger RCR development area have identified contaminants that may require additional investigation which will inform the need for any remediation.

Q1.1.2 Identify the Decision / Goal of the Study

The decision / goal of the validation process is to enable a statement on the suitability of the site for the proposed land-use as a hospital.

The assessment of the suitability of the site for continued use as a hospital will be based on a comparison of the analytical results for all contaminants of concern to the adopted SAC and, if necessary, compared to the 95% UCL of the mean concentrations (relevant to soil contamination under certain circumstances).

The following specific decisions will be made, as appropriate:

- What is the conceptual site model (i.e., sources, receptors, migration pathways, exposure)?
- Do the existing fill materials and / or natural soils pose a potential risk to identified receptors?
- Does the existing groundwater beneath the site pose a potential risk to identified receptors?
- Is the data sufficient to make a decision regarding the abovementioned risks, the compatibility of the site for the proposed land use or are additional investigations required?
- Does contamination at the site, if encountered, trigger the Duty to Report requirements under the *Contaminated Land Management Act* 1997 (NSW)?
- Are there any off-site migration issues that need to be considered?

Q1.1.3 Identify Inputs to the Decision

Inputs into the decisions are as follows:

- Review of previous contamination investigation reports by DP;
- Review of regional geology, topography, ASS risk mapping and hydrogeology as reported in the PSI;

- Intrusive sampling and testing on collected at a combination of targeted and grid-based sampling locations and analysed for the relevant contaminants of concern;
- Field and laboratory QA / QC data to assess the suitability of the environmental data for the assessment;
- All analysis undertaken at a qualified laboratory NATA accredited for the analysis undertaken; and
- The results will be compared with the SAC discussed in Section 9.

Q1.1.4 Define the Study Boundaries

The study boundary is the boundary of the site shown on Drawing 1, Appendix A.

Q1.1.5 Develop an Analytical Approach (or Decision Rule)

The information obtained during the validation process will be used to characterise the site in terms of remaining contamination issues and risk to human health and / or the environment. The decision rules used in validating the site will be as follows:

- Laboratory test results for fill / soil will be assessed individually or statistically, if considered appropriate, to determine the 95% UCL of the mean concentration for each analyte or analyte group (of like materials);
- Laboratory test results for targeted locations (and identified 'hot spots') will be assessed individually;
- The adopted SAC will be from EPA endorsed guidelines. Where such criteria are not available, other recognised national or international standards will be used;
- The contaminant concentrations in fill / soil should meet the following criteria, or further investigation or remedial action is required if:
  - The concentration of the contaminant is more than 2.5 times the SAC. Any location more than 2.5 times the adopted site criteria is classified as a 'hotspot', requiring further assessment / management;
  - The calculated 95% UCL for a relevant area and discrete impacted fill / soil stratum (excluding any 'hotspot' concentrations) exceeds the adopted SAC; and
  - The standard deviation of the results is greater than 50% of the SAC.

Field and laboratory test results are considered useable for the assessment after evaluation against the following Data Quality Indicators (DQIs):

- Precision - A measure of variability or reproducibility of data;
- Accuracy - A measure of closeness of the data to the 'true' value;
- Representativeness - The confidence (qualitative) of data representativeness of media present on site;
- Completeness - A measure of the amount of usable data from a data collection activity; and
- Comparability - The confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event.

Q1.1.6 Specify Limits on the Decision Error

Decision errors for the proposed validation assessment will be minimised and measured by the following:

- Compare new data with available previous investigation data to determine the possible range of the parameters of interest;
- The sampling regime will target key strata identified to account for site variability;
- Sample collection and handling techniques will be with reference to DP's Field Procedures Manual;
- Samples will be prepared and analysed by a NATA accredited laboratory with the acceptance limits for laboratory QA / QC parameters based on the laboratory reported acceptance limits and those stated in NEPC (2013);
- The analyte selection is based on the available site history, past site activities, site features and the findings of the previous investigations. The potential for contaminants other than those proposed to be analysed is currently considered to be low;
- The SAC will be adopted from established and EPA endorsed guidelines where available. The SAC have risk probabilities already incorporated;
- A significance level of 0.05 will be adopted for data with statistical analysis of 95% UCL of average concentrations; and
- Only NATA accredited laboratories using NATA endorsed methods will be used to perform laboratory analysis. Where NATA endorsed methods are not used, the reasons will be stated. The effect of using non-NATA methods (if relevant) on the decision making process will be explained.

Q1.1.7 Optimise the Design for Obtaining Data

Sampling design and procedures that will be implemented to optimise data collection for achieving the DQOs included the following:

- Only NATA endorsed methods are used to perform laboratory analysis whenever possible;
- Grid based soil sampling (within access constraints) will generally be used to provide representative coverage of the site;
- Where possible, targeted samples will be incorporated into the grid based sampling;
- Sample numbers will generally comply with those recommended in the NSW EPA (1995) *Sampling Design Guidelines*;
- To optimise the selection of soil samples for chemical analysis, all samples collected will be screened using a calibrated photoionization detector (PID) allowing for site assessment and sample selection. In addition, additional soil samples will be collected but kept 'on hold' pending details of initial analysis and will be analysed if further delineation is required; and
- Adequately experienced environmental scientists / engineers will be chosen to conduct field work and sample analysis interpretation.

Q2. Field and Laboratory Quality Control

The field and laboratory QC procedures and results are summarised in the following Table Q2. Reference should be made to the fieldwork and analysis procedures in Section 6 and the laboratory results certificates in Appendix F for further details.

Table Q2: Field and Laboratory QC

Item	Evaluation / Acceptance Criteria	Achievement
Analytical laboratories used	NATA accreditation	yes
Holding times	Various based on type of analysis	yes
Laboratory replicates	10% of primary samples; <50% RPD (>5 x PQL)	yes [1 2]
Trip Spikes	1 per sampling event; 60-140% recovery	yes [3]
Trip Blanks	1 per sampling event; <PQL	yes [2]
Laboratory / Reagent Blanks	1 per batch; <PQL	yes
Matrix Spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Surrogate Spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Control Samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes

1 – refer to qualitative assessment of results overall in section Q2.1
2- Quantity sufficient for samples analysed for chemical analytes, including soil and groundwater.
3 – refer to assessment of frequency in section Q2.3 and Q2.4

In summary, the QC data is determined to be of sufficient quality to be considered acceptable for the assessment.

Q2.1 Intra-Laboratory Replicates

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory ELS and as a measure of consistency of sampling techniques. A discussion of the intra-laboratory replicate samples is presented in DP (2018) and DP (2019a) as appropriate. The comparative results of analysis between original and intra-laboratory replicate samples for the current (2020) sampling are summarised in Table Q3.

Note that, where both samples are below 5 times the LOR/PQL the RPD has not been calculated. Where one sample is reported below LOR/PQL, but a concentration is reported for the other which is at least 5 times the PQL/LOR, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample..

Table Q3: Intra-Laboratory Duplicates

Lab	Sample ID	Date Sampled	Units	Metals								PAH				TRH				BTEX			
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Napthalene	Benzo(a)pyrene	Benzo(a)pyrene TEQ	Total PAH	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-34)	F4 (>C34-40)	Benzene	Toluene	Ethylbenzene	Total Xylenes
Soil																							
ELS	BH605	19/08/2020	mg/kg	<4	<0.4	43	15	24	<0.1	35	53	<0.1	<0.05	<0.5	<0.05	<25	<50	<100	<100	<0.2	<0.5	<1	<3
ELS	BD1/20200819	19/08/2020	mg/kg	<4	<0.4	35	50	17	<0.1	34	52	<0.1	0.07	<0.5	0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3
Difference			mg/kg	0.0	0.0	8.0	35.0	7.0	0.0	1.0	1.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RPD			%	-	-	20.5	**107.7**	**34.1**	-	2.9	1.9	-	-	-	**155.6**	-	-	-	-	-	-	-	-
Groundwater																							
ELS	BH608	8/09/2020	ug/L	<1	<0.1	<1	9	<1	<0.05	6	17	<0.2	0.2	<0.5	0.82	<10	<50	<100	<100	<1	<1	<1	<3
ELS	BD1/20200908	8/09/2020	ug/L	<1	<0.1	<1	1	<1	<0.05	5	16	<0.2	0.3	<0.5	1.5	<10	<50	<100	<100	<1	<1	<1	<3
Difference			ug/kg	0	0	0	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
RPD			%	-	-	-	**160**	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-

The calculated RPD values were generally within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics with the with the exception of those in bold. However, this is not considered to be significant because:

- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- The majority of RPDs within a replicate pair being within the acceptable limits; and
- All other QA/QC parameters met the DQIs.

Q2.2 Trip Spike

The purpose of a trip spike is to assess the potential for loss of volatile analytes to have occurred between the time of collection and analysis of the sample by the laboratory.

For soils, laboratory preparation of the trip spike involved putting 1mL of BTEX (using a 1500 ppm BTEX trip spike standard) into two jars which were cross referenced and labelled 'trip spike' and 'control'. Both jars were sealed. The trip spike was taken onto site and subject to the same jar storage and transfer as the field samples. The control was stored by the laboratory in the refrigerator. Following receipt of the trip spike, the laboratory analysed both the trip spike and corresponding control with results of the trip spike being expressed as the % difference from the control sample.

For water trip spikes, the laboratory prepared the trip spike by injecting 220 µL of BTEX into the trip spike. The results were then analysed and expressed as % of theoretical value of a 50 ppb standard.

The generally acceptance limit for trip spikes is 60-140% in difference compared to the control or standard.

The results of the laboratory analysis for the trip spikes included with the current samples (2020) are shown in Table Q4.

Table Q4: Trip Spike Results – Soils (% Recovery)

Sample ID	Lab Report	Benzene	Toluene	Ethylbenzene	m + p Xylene	o Xylene
TS/20200819	ELS 249420	99	104	103	105	103

Results indicate that the percentage loss for BTEX during the trip was minimal and therefore appropriate preservation techniques were employed. The frequency was deemed acceptable given the lack of detection of volatile contaminations and minimal losses during handling / transport despite that sampling occurred over multiple smaller sampling events.

The same outcomes were reported for trip spike samples included in DP (2018) and DP (2019a).

Q2.3 Trip Blank

The purpose of a trip blank is to assess the potential for transfer of contaminants into samples to have occurred between the time of collection and analysis of the sample by the laboratory. Laboratory prepared soil field blanks were taken out to the field unopened, subjected to the same preservation methods as the field samples, then analysed for the purposes of determining whether transfer of contaminants into the blank sample had occurred prior to reaching the laboratory. The results of the laboratory analysis for the field blanks included with the current samples (2020) are shown in Table Q5.

Table Q5: Trip Blank Results - Soils (mg/kg)

Sample ID	Lab Report	Benzene	Toluene	Ethylbenzene	m + p Xylene	o Xylene
TB/20200819	ELS 249420	<0.2	<0.5	<1	<2	<1

The concentrations of the analytes were all below laboratory detection limits indicating that significant cross contamination had not occurred during the course of the round trip from the site to the laboratory. The frequency was deemed acceptable given the lack of detection of volatile contaminations and lack of cross contamination during handling / transport despite that sampling occurred over multiple smaller sampling events.

The same outcomes were reported for trip blank samples included in DP (2018) and DP (2019a).

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following Data Quality Indicators (DQIs):

- Completeness - A measure of the amount of usable data from a data collection activity;
- Comparability - The confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness - The confidence (qualitative) of data representativeness of media present on-site;
- Precision - A measure of variability or reproducibility of data; and
- Accuracy - A measure of closeness of the data to the ‘true’ value.

The DQIs were assessed as outlined in the following Table Q6.

Table Q6: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Systematic and selected target locations sampled; Preparation of logs, sample location plan and chain of custody records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); Completion of chain of custody (COC) documentation; NATA accredited laboratory results certificates provided by the laboratory; Mostly satisfactory frequency and results for field and laboratory quality control (QC) samples as discussed in Section Q2.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Experienced sampler(s) used; Use of NATA registered laboratories, with test methods the same or similar between laboratories; Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled; Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQOs; Samples were extracted and analysed within holding times; Samples were analysed in accordance with the COC.
Precision	Field staff followed standard operating procedures; Acceptable RPD (generally) between original samples and replicates; Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures; Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been met. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

Appendix E

Logs

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.7 AHD
EASTING: 337095
NORTHING: 6245556.4
DIP/AZIMUTH: 90°/--

BORE No: BH601
PROJECT No: 72505.18
DATE: 19 & 27/08/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
55	0.09	ASPHALTIC CONCRETE										
	0.3	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium sand, moist							E			
	0.6	FILL/Gravelly SAND: medium, brown, fine igneous subangular and subrounded, fine sandstone gravel, moist							E			
1									E/D			
		SAND SP: fine to medium, pale grey, moist, loose, aeolian										
54	1.8	SAND SP: fine to medium, yellow-brown, trace silt, moist, medium dense, aeolian							S			4,5,6 N = 11
2												
53												
3		Below 3.0m: dark red-brown, apparently dense						Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°	D			
52		Below 4.0m: wet				▽						
4	4.05								S			18/50 refusal
	4.11	SANDSTONE: medium to coarse grained, pale grey and yellow brown, with 10% decomposed seams, very low then low and medium strength, highly and slightly weathered, slightly fractured, Hawkesbury Sandstone						4.05m: CORE LOSS: 60mm				PL(A) = 0.04
51												PL(A) = 0.4
5												PL(A) = 0.28
								5.29m: Ds 140mm				
								5.5m: Ds 10mm	C	98	77	
50								5.68m: Ds 90mm				
6	6.0	SANDSTONE: medium to coarse grained, pale grey, cross bedded at 10-20°, medium strength, slightly weathered then fresh, slightly fractured, Hawkesbury Sandstone										PL(A) = 0.85
49								6.65m: Ds 10mm, fe, st				
7												PL(A) = 0.72
	7.5	SANDSTONE: medium grained, pale grey, medium to high strength, fresh, unbroken, Hawkesbury Sandstone						7.59m: B10°, pl, ro, cly 1mm				
48												
8												PL(A) = 0.88
									C	100	99	
47								8.6m: Ds 20mm				
9												PL(A) = 1.2
46												

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HW to 4.0m, HQ to 4.0m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 4.0m, NMLC Coring to 16.02m

WATER OBSERVATIONS: Water seepage at 3.95m, 20% water loss below 8.0m

REMARKS: Bulk samples taken 0.5-1.5m, 1.5-2.0m & 2.0-3.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.7 AHD
EASTING: 337095
NORTHING: 6245556.4
DIP/AZIMUTH: 90°/--

BORE No: BH601
PROJECT No: 72505.18
DATE: 19 & 27/08/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
45	11	SANDSTONE: medium grained, pale grey, medium to high strength, fresh, unbroken, Hawkesbury Sandstone *(continued)*						10.68m: B0°, pl, ro, cly vn & J80-90°, un, ro, cln 10.76m: B0°, pl, ro, cly co				PL(A) = 1.3
44	12								C	100	98	PL(A) = 0.96 PL(A) = 1.3
43	13							>>				PL(A) = 0.97
42	14	Between 14.2-15.85m: cross bedded at 5-15°						14.35m: B5°, pl, ro, cly vn	C	100	97	PL(A) = 1
41	15							15.17m: B (x2) 5°, pl, ro, cly vn				PL(A) = 0.98
40	16 16.02	Bore discontinued at 16.02m Target depth reached										PL(A) = 0.68
39	17											
38	18											
37	19											
36												

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HW to 4.0m, HQ to 4.0m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 4.0m, NMLC Coring to 16.02m

WATER OBSERVATIONS: Water seepage at 3.95m, 20% water loss below 8.0m

REMARKS: Bulk samples taken 0.5-1.5m, 1.5-2.0m & 2.0-3.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55 AHD
EASTING: 337097.5
NORTHING: 6245571.8
DIP/AZIMUTH: 90°/--

BORE No: BH602
PROJECT No: 72505.18
DATE: 19 & 24/08/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
55	0.09	ASPHALTIC CONCRETE										
	0.28	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist							E			
	0.7	FILL/SAND: fine to medium, dark brown, with silt, moist							E/D			
54	1	SAND SP: fine to medium, pale grey, moist, aeolian							E/D			
53	2											
	2.2	SAND SP: fine to medium, orange-brown, apparently cemented, iron indurated, ("coffee rock"), aeolian							S			4,3,5 N = 8
	2.6								D			
52	3	SAND SP: fine to medium, yellow-brown, moist, aeolian							D			
	3.2	Below 3.1m: becoming wet							S			5,25/125 refusal
	3.35	SANDSTONE: medium grained, pale yellow-brown, apparently very low to low strength, Hawkesbury Sandstone										
51	4	Bore discontinued at 3.35m Target depth reached										
50	5											
49	6											
48	7											
47	8											
46	9											

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH **CASING:** None

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 3.35m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk sample taken at 0.7-1.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121809 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.2 AHD
EASTING: 337102.9
NORTHING: 6245608
DIP/AZIMUTH: 90°/--

BORE No: BH603
PROJECT No: 72505.18
DATE: 19 & 26/08/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
54	0.04	ASPHALTIC CONCRETE							E			
	0.45	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist										
	0.8	FILL/Gravelly SAND: medium, brown, subangular, fine igneous and subrounded, fine sandstone gravel, moist							E/D			
53	1								E/D			
	1.3	FILL/Silty SAND: fine to medium, dark brown, non-plastic fines, with subangular, fine sandstone gravel, moist						Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°	E/D			
	1.7	Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, residual							D			PL(A) = 0.28
52	2	below 1.5m: pale orange-brown										PL(A) = 0.62
		SANDSTONE: medium to coarse grained, orange-brown and pale grey, low and medium strength with extremely low strength bands, highly weathered, slightly fractured, Hawkesbury Sandstone						2.56m: B0°, pl, ro, cly vn 2.73m: Ds 10mm	C	96	76	
51	3							3.3m: Cs 60mm				PL(A) = 0.33
	3.91							3.8m: CORE LOSS: 110mm				
50	4							3.94m: B0°, pl, sm, cly 1mm				PL(A) = 0.26
	4.2	SANDSTONE: medium to coarse grained, pale grey with some yellow-brown, cross bedded at 20°, medium then high strength, slightly weathered,						4.61m: B0°, pl, sm, cly 1mm				
49	5											PL(A) = 0.55
								5.28m: B (x3) 10°, pl, ro, cly vn	C	100	88	
48	6											PL(A) = 1.8
								6.31m: Ds 50mm				
								6.56m: J40°, pl, ro, cln 6.64m: Ds 10mm				
	7											
47	7.04							6.92m: CORE LOSS: 120mm				PL(A) = 1
	7.25	SANDSTONE: medium grained, pale grey, medium then high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone										
								7.75m: Ds 10mm				
46	8											PL(A) = 0.92
								8.46m: B0°, un, cly co	C	97	97	
45	9											PL(A) = 0.46

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HW to 1.8m, HQ to 1.8m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.7m, Solid flight auger to 1.8m, NMLC Coring to 16.00m

WATER OBSERVATIONS: Water seepage at 1.8m

REMARKS: Bulk sample taken 0.45-0.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.2 AHD
EASTING: 337102.9
NORTHING: 6245608
DIP/AZIMUTH: 90°/--

BORE No: BH603
PROJECT No: 72505.18
DATE: 19 & 26/08/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
44	10.09	SANDSTONE: medium grained, pale grey, medium then high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*						10.02m: CORE LOSS: 70mm				PL(A) = 0.92
43	11								C	98	98	PL(A) = 0.84
42	12											PL(A) = 0.48
41	13											PL(A) = 0.81
40	14							13.55m: J30°, pl, ro, cln 14.2m: B0°, pl, ro, cly vn	C	100	99	PL(A) = 1.2
39	15							14.65m: J30°, pl, ro, cly vn 14.68m: B0°, pl, ro, cly vn				PL(A) = 1.1
	16 16.0	Bore discontinued at 16.0m Target depth reached										PL(A) = 1.1
38												
37	17											
36	18											
35	19											

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HW to 1.8m, HQ to 1.8m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.7m, Solid flight auger to 1.8m, NMLC Coring to 16.00m

WATER OBSERVATIONS: Water seepage at 1.8m

REMARKS: Bulk sample taken 0.45-0.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.9 AHD
EASTING: 337107
NORTHING: 6245631.8
DIP/AZIMUTH: 90°/--

BORE No: BH604
PROJECT No: 72505.18
DATE: 19 & 24/08/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
54	0.075	ASPHALTIC CONCRETE										
	0.24	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist							E			
	0.4	FILL/Gravelly SAND: medium, brown, subangular, fine igneous gravel, moist							E			
53	1	FILL/SAND: fine to medium, brown, trace subrounded, fine to coarse sandstone gravel, moist							E			
	1.6	Between 1.0-1.2m: large brick fragment, dark brown silty sand, with charcoal							E/D			
52	1.9	Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, residual							D			
	2								S			3,2,3 N = 5
		SAND: fine to medium, orange-brown, with clay, moist, loose, residual										
	3	Below 2.7m: wet							D			
51		Below 2.95m: with pale grey sand, medium dense							S			10,11,17 N = 28
	3.4											
	3.45	SANDSTONE: medium grained, pale grey, very low to low strength, Hawkesbury Sandstone										
50	4	Bore discontinued at 3.45m Target depth reached										
	5											
49	6											
48	7											
47	8											
46	9											
45												

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH **CASING:** None

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.9m, Solid flight auger to 3.45m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk samples taken 0.4-1.6m & 1.7-1.9m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD
EASTING: 337109.8
NORTHING: 6245649.5
DIP/AZIMUTH: 90°/--

BORE No: BH605
PROJECT No: 72505.18
DATE: 19 & 25/08/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
55	0.11	ASPHALTIC CONCRETE										
	0.24	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist							E/D			
	0.6	FILL/Gravelly SAND: medium, brown, subangular, fine igneous gravel, moist							E*/D			
54	1	Between 0.4-0.55m: large brick fragment							E/D			
	1.35											
	1.5	FILL/SAND: fine to medium, brown, trace subrounded, fine to coarse sandstone gravel, silt, and glass fragment, moist							E			
53	2	SAND SP: fine to medium, pale grey, moist, aeolian							D			
	2.5	Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, loose, residual							S			1,3,2 N = 5
	3	Below 2.2m: with ironstone bands				▷		Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°	D			
	3.18	Sandy CLAY CI: low to medium plasticity, pale grey, w~PL, residual (Extremely weathered sandstone)							S			7,25/30 refusal
52		SANDSTONE: medium to coarse grained, pale grey and red-brown, low to high strength, moderately and highly weathered, slightly fractured to unbroken, Hawkesbury Sandstone										PL(A) = 0.23
	4							3.7m: Cs 50mm				
51								4m: J60°, pl, ro, fe st				PL(A) = 0.94
									C	98	96	
	4.94							4.9m: CORE LOSS: 40mm				PL(A) = 1.3
50	5							5.66m: Ds 30mm				
	5.75	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone										PL(A) = 0.76
49	6							6.48m: Ds 60mm				
												PL(A) = 0.84
48	7								C	100	98	
								7.57m: B0°, pl, ro, cly vn				
	8											PL(A) = 0.84
47												
	9											PL(A) = 1.3
	9.0	SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone										
46								>>	C	100	100	

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119606 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD
EASTING: 337109.8
NORTHING: 6245649.5
DIP/AZIMUTH: 90°/--

BORE No: BH605
PROJECT No: 72505.18
DATE: 19 & 25/08/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
45		SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*										PL(A) = 1.3
		Between 10.7-12.17: cross bedded at 0-10°							C	100	100	
44	11											PL(A) = 1.6
	12							12.15m: B0°, pl, ro, cln				PL(A) = 2
43	13								C	100	97	PL(A) = 1.4
42	14	Between 13.9-15.4m: cross bedded at 0-10°						13.97m: B5°, pl, cly 1mm 14.25m: B10°, pl, cly vn 14.33m: B10°, pl, cly vn				PL(A) = 1.4
41	15							15.38m: Ds 10mm	C	100	99	PL(A) = 2
40	16							16.11m: Ds 10mm				PL(A) = 2.2
39	16.28	Bore discontinued at 16.28m Target depth reached										
38	17											
37	18											
36	19											

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119606 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD
EASTING: 337045.4
NORTHING: 6245584.9
DIP/AZIMUTH: 90°/--

BORE No: BH606
PROJECT No: 72505.18
DATE: 28 - 31/8/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
52	0.06	ASPHALTIC CONCRETE							D			
	0.2	FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry, roadbase							E/D*			
	0.6	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry							E/D			
51	1								S			3,4,4 N = 8
	1.4	FILL/ SAND: fine to medium, pale grey, dry										
		SAND SP: fine to medium, brown, dry, loose, aeolian										
50	2	Below 1.8m: moist							E/D			
		Below 2.5m: medium dense							S			5,7,9 N = 16
49	3							Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°				
	3.1	SANDSTONE: medium to coarse grained, yellow-brown, very low to low strength, Hawkesbury Sandstone										PL(A) = 0.14
	3.6	SANDSTONE: medium to coarse grained, pale grey with some pale orange staining, low then medium strength, slightly weathered, slightly fractured, Hawkesbury Sandstone										PL(A) = 0.23
48	4								C	100	99	
												PL(A) = 0.61
47	5							5.24m: Ds 10mm				
												PL(A) = 0.68
46	6											
	6.25	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone										PL(A) = 0.46
45	7							7.37m: Ds 20mm	C	100	98	
												PL(A) = 0.76
44	8							8.68m: Ds 40mm				
								8.91m: Ds 20mm				PL(A) = 0.68
43	9								C	100	96	

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD
EASTING: 337045.4
NORTHING: 6245584.9
DIP/AZIMUTH: 90°/--

BORE No: BH606
PROJECT No: 72505.18
DATE: 28 - 31/8/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
42		SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*										PL(A) = 0.52
41	11							11.09m: Ds 110mm 11.43m: Ds 60mm	C	100	96	PL(A) = 0.45
40	12											PL(A) = 0.88
39	13								C	100	98	PL(A) = 1
38	14							14.35m: B0°, pl, ro, cly vn 14.53m: Ds 40mm				PL(A) = 0.72
37	15								C	100	98	PL(A) = 0.64
36	16							15.95m: Ds 50mm				PL(A) = 0.08
	16.19	Bore discontinued at 16.19m Target depth reached						16.17m: Ds 20mm				
35	17											
34	18											
33	19											

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.6 AHD
EASTING: 337035.3
NORTHING: 6245607.6
DIP/AZIMUTH: 90°/--

BORE No: BH607
PROJECT No: 72505.18
DATE: 31/8/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
52	0.06	ASPHALTIC CONCRETE							E/D			
	0.25	FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry, roadbase							E/D			
	0.55	FILL/SAND: fine to medium, pale grey, trace brick and tile fragments, dry, loose							E/D			
51	1.4	SAND SP: fine to medium, yellow-brown, moist, loose, aeolian							S			7,8,6 N = 14
		SAND SC: fine to medium, dark brown, with clay, loose, moist, aeolian							E/D*			
50									S			1,3,3 N = 6
49								Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°				
	3.89							3.89m: CORE LOSS: 30mm				
48	3.92	SANDSTONE: medium to coarse grained, pale grey and pale orange, low strength, slightly weathered, slightly fractured, Hawkesbury Sandstone						4.21m: B5°, pl, ro, cln 4.58m: B0°, pl, ro, cly vn	C	98	98	PL(A) = 0.14
	4.9	SANDSTONE: medium grained, pale grey, low strength, fresh, unbroken, Hawkesbury Sandstone										PL(A) = 0.29
47												PL(A) = 0.22
46	6.35	SANDSTONE: medium grained, pale grey, medium strength with high strength bands, fresh, unbroken, Hawkesbury Sandstone						6.27m: CORE LOSS: 80mm	C	98	98	PL(A) = 0.66
45								7.41m: Ds 10mm				PL(A) = 0.84
44									C	100	98	PL(A) = 0.76
43												

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HQ to 3.89m

TYPE OF BORING: Solid flight auger to 3.8m, Rotary to 3.89m, NMLC Coring to 17.59m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD04/20200831, Bulk samples taken 0.6-1.4m, 1.5-3.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.6 AHD
EASTING: 337035.3
NORTHING: 6245607.6
DIP/AZIMUTH: 90°/--

BORE No: BH607
PROJECT No: 72505.18
DATE: 31/8/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
42		SANDSTONE: medium grained, pale grey, medium strength with high strength bands, fresh, unbroken, Hawkesbury Sandstone *(continued)*										PL(A) = 0.81
								10.3m: B5°, pl, ro, cln				
								10.49m: Ds 40 mm				
									C	100	98	
11												PL(A) = 0.87
								11.15m: B0°, pl, ro, cly, vn				
41	11.64							11.58m: CORE LOSS: 60mm				
12												PL(A) = 1.3
40												
13									C	98	95	PL(A) = 0.5
39												
14								13.9m: Ds 110mm				PL(A) = 1.7
								14.46m: Ds 50mm				
38												
15												PL(A) = 0.3
37												
16									C	100	100	PL(A) = 0.94
								16.33m: Ds 10mm				
36												
17		Between 16.85-17.57: with siltstone clasts										PL(A) = 1.1
35	17.59	Bore discontinued at 17.59m						17.5m: B0°, pl, ro, cly vn				
		Target depth reached										
18												
34												
19												
33												

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HQ to 3.89m

TYPE OF BORING: Solid flight auger to 3.8m, Rotary to 3.89m, NMLC Coring to 17.59m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD04/20200831, Bulk samples taken 0.6-1.4m, 1.5-3.8m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD
EASTING: 337054.9
NORTHING: 6245642.4
DIP/AZIMUTH: 90°/--

BORE No: BH608
PROJECT No: 72505.18
DATE: 27 - 28/8/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
52	0.05	ASPHALTIC CONCRETE							E/D			
	0.2	FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry										
	0.5	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry							E/D			
1									E/D*			
	1.5	FILL/SAND: fine to medium, brown, trace silt, and fine subangular igneous gravel, dry							S			1,1,1 N = 2
51		SAND SP: fine to medium, yellow-brown, with clay, moist, loose, aeolian						Unless noted otherwise, rock is fractured along rough, planar bedding planes dipping at 0-20°				
2	2.5								E/D			
		SANDSTONE: medium to coarse grained, pale yellow and red, very low then low strength, highly weathered, slightly fractured, Hawkesbury Sandstone							S			25/90 refusal
50												PL(A) = 0.07
3								2.92m: B5°, un, ro 3.06m: J10-90°, st, ro, cln 3.23m: Ds 5mm 3.26m: Ds 40mm				
								3.68m: Ds 80mm				
49												PL(A) = 0.08
4								4.12m: B5°, pl, ro, st	C	97	72	
48	4.83							4.72m: CORE LOSS: 110mm				
5	5.02	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone						4.83m: Ds 20mm				PL(A) = 0.19
47												PL(A) = 0.91
6								6.63m: Ds 60mm				
46												PL(A) = 1
7								7.31m: CORE LOSS: 20mm 7.33m: Ds 10mm	C	99	99	
45												PL(A) = 0.81
8												
44								8.85m: CORE LOSS: 30mm				PL(A) = 0.97
9									C	99	99	
43												

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 2.6m, HQ to 2.75m

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119607 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD
EASTING: 337054.9
NORTHING: 6245642.4
DIP/AZIMUTH: 90°/--

BORE No: BH608
PROJECT No: 72505.18
DATE: 27 - 28/8/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (XW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
42	11	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*										PL(A) = 1
								11.12m: B0°, pl, ro, cln	C	99	99	PL(A) = 1.1
41	11.89							11.83m: CORE LOSS: 60mm				
	12							12.14m: B0°, pl, ro, cln				PL(A) = 1.2
40	13							12.89m: B0°, pl, ro, cly vn	C	98	98	PL(A) = 0.83
								13.48m: B0°, pl, ro, cly vn				
39	14											PL(A) = 0.75
38	15											PL(A) = 1.1
								15.13m: Ds 30mm				PL(A) = 0.15
								15.45m: Ds 10mm	C	100	98	
37	16							15.98m: B0-10°, un, sm				PL(A) = 1.2
	16.33	Bore discontinued at 16.33m Target depth reached										
36	17											
35	18											
34	19											
33												

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 2.6m, HQ to 2.75m

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119607 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55 AHD
EASTING: 337097.5
NORTHING: 6245571.8
DIP/AZIMUTH: 90°/--

BORE No: BH602
PROJECT No: 72505.18
DATE: 19 & 24/08/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
55	0.09	ASPHALTIC CONCRETE		E	0.1				Gatic cover
	0.28	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist			0.3				
				E/D	0.4				Grout 0.0-1.0m
	0.7	FILL/SAND: fine to medium, dark brown, with silt, moist			0.6				
54	1	SAND SP: fine to medium, pale grey, moist, aeolian			0.8				
				E/D	1.0				Bentonite 1.0-1.5m
									Blank pipe 0.1-3.8m
53	2				2.0				
	2.2	SAND SP: fine to medium, orange-brown, apparently cemented, iron indurated, ("coffee rock"), aeolian		S			4,3,5 N = 8		
					2.45				Slotted PVC screen 1.5-3.34m
	2.6	SAND SP: fine to medium, yellow-brown, moist, aeolian		D	2.5				Gravel 1.5-3.35m
					2.6				
				D	2.8				
52	3				3.0				
	3.2	Below 3.1m: becoming wet		S			5,25/125 refusal		
	3.35	SANDSTONE: medium grained, pale yellow-brown, apparently very low to low strength, Hawkesbury Sandstone			3.27				End cap
51	4	Bore discontinued at 3.35m Target depth reached							
50	5								
49	6								
48	7								
47	8								
46	9								

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH **CASING:** None

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.5m, Solid flight auger to 3.35m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Bulk sample taken at 0.7-1.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121809 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD
EASTING: 337109.8
NORTHING: 6245649.5
DIP/AZIMUTH: 90°/--

BORE No: BH605
PROJECT No: 72505.18
DATE: 19 & 25/08/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
55	0.11	ASPHALTIC CONCRETE		E/D	0.1				Gatic cover
	0.24	FILL/ROADBASE: Sandy GRAVEL, sub-angular, fine igneous gravel, grey, medium, moist			0.3				
				E*/D	0.4				
	0.6	FILL/Gravelly SAND: medium, brown, subangular, fine igneous gravel, moist			0.5				
1		Between 0.4-0.55m: large brick fragment		E/D	0.9				1
					1.1				Backfill 0.0-2.3m
54		FILL/SAND: fine to medium, brown, trace subrounded, fine to coarse sandstone gravel, silt, and glass							
	1.35			E	1.4				
	1.5	fragment, moist		D	1.5				
		SAND SP: fine to medium, pale grey, moist, aeolian			1.6				
2		Clayey SAND SC: fine to medium, orange-brown, low plasticity, moist, loose, residual							2
53					2.0				
		Below 2.2m: with ironstone bands		S			1,3,2 N = 5		
	2.5				2.45				
		Sandy CLAY CI: low to medium plasticity, pale grey, w~PL, residual (Extremely weathered sandstone)		D	2.5				
					2.6				Bentonite 2.3-3.3m
3									3
				S	3.0		7,25/30 refusal		
	3.18				3.18				
52		SANDSTONE: medium to coarse grained, pale grey and red-brown, low to high strength, moderately and highly weathered, slightly fractured to unbroken, Hawkesbury Sandstone			3.3		PL(A) = 0.23		
									Blank pipe 0.1-3.8m
4									4
51					4.2		PL(A) = 0.94		
				C					
5	4.94				5.0		PL(A) = 1.3		5
50									
	5.75				5.84				
6		SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone			6.0		PL(A) = 0.76		6
49									
7					7.0		PL(A) = 0.84		7
48				C					
8					8.0		PL(A) = 0.84		8
47									
					8.85				
9					9.0		PL(A) = 1.3		9
46				C					
					10.0		PL(A) = 1.3		Gravel 3.3-3.8m

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119606 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 55.3 AHD
EASTING: 337109.8
NORTHING: 6245649.5
DIP/AZIMUTH: 90°/--

BORE No: BH605
PROJECT No: 72505.18
DATE: 19 & 25/08/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
45	11	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*		C	11.0		PL(A) = 1.6		Slotted PVC screen 3.8-16.27m
		SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone							
44		SANDSTONE: medium grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*							
		Between 10.7-12.17: cross bedded at 0-10°			11.81				
43	12				12.0		PL(A) = 2		
	13			C	13.0		PL(A) = 1.4		
42									
	14	Between 13.9-15.4m: cross bedded at 0-10°			14.0		PL(A) = 1.4		
41					14.83				
	15				15.0		PL(A) = 2		
40				C					
	16				16.0		PL(A) = 2.2		
39	16.28	Bore discontinued at 16.28m			16.28				End cap
		Target depth reached							
38	17								
	18								
37									
	19								
36									

RIG: Vac Truck, Hand Tools & Bobcat **DRILLER:** VAC Group **LOGGED:** KR/JJH/TM **CASING:** HQ to 3.1m

TYPE OF BORING: Diatube to 0.1m, Non-Destructive-Drilling (NDD) and Hand-Auger to 1.8m, Solid flight auger to 3.18m, NMLC Coring to 16.28m

WATER OBSERVATIONS: Water seepage at 3.1m

REMARKS: *Field replicate sampleBD1/20200819, Bulk samples taken 0.4-1.0m & 1.5-1.8m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119606 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD
EASTING: 337045.4
NORTHING: 6245584.9
DIP/AZIMUTH: 90°/--

BORE No: BH606
PROJECT No: 72505.18
DATE: 28 - 31/8/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
52	0.06	ASPHALTIC CONCRETE		D	0.1				Gatic cover
	0.2	FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry, roadbase			0.2				Grout 0.0-1.0m
				E/D*	0.4				Bentonite 0.15-0.35m
	0.6	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry			0.5				Blank pipe 0.15-0.5m
				E/D	0.8				
51	1	FILL/ SAND: fine to medium, pale grey, dry		S	1.0		3,4,4 N = 8		1
	1.4	SAND SP: fine to medium, brown, dry, loose, aeolian			1.45				
		Below 1.8m: moist		E/D	1.9				Slotted PVC screen 0.5-3.0m
50	2				2.0				2 Gravel 0.5-3.0m
		Below 2.5m: medium dense		S	2.5		5,7,9 N = 16		
49	3				2.95				3 End cap
	3.1	SANDSTONE: medium to coarse grained, yellow-brown, very low to low strength, Hawkesbury Sandstone							Bentonite 3.0-4.0m
	3.6	SANDSTONE: medium to coarse grained, pale grey with some pale orange staining, low then medium strength, slightly weathered, slightly fractured, Hawkesbury Sandstone			3.6		PL(A) = 0.14		
48	4			C	4.0		PL(A) = 0.23		4
47	5				5.1		PL(A) = 0.61		5
					5.8				
46	6				6.0		PL(A) = 0.68		6
	6.25	SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone							
45	7			C	7.0		PL(A) = 0.46		7
44	8				8.0		PL(A) = 0.76		8
					8.8				
43	9			C	9.0		PL(A) = 0.68		9
					10.0		PL(A) = 0.52		

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.1 AHD
EASTING: 337045.4
NORTHING: 6245584.9
DIP/AZIMUTH: 90°/--

BORE No: BH606
PROJECT No: 72505.18
DATE: 28 - 31/8/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
42		SANDSTONE: medium grained, pale grey, medium strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*							Backfill 4.0-16.19m
41	11			C	11.0		PL(A) = 0.45		
					11.8				
40	12				12.0		PL(A) = 0.88		
39	13			C	13.0		PL(A) = 1		
38	14				14.0		PL(A) = 0.72		
					14.8				
37	15			C	15.0		PL(A) = 0.64		
36	16				16.05		PL(A) = 0.08		
	16.19	Bore discontinued at 16.19m Target depth reached			16.19				
35	17								
34	18								
33	19								

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 3.2m, HQ to 3.6m

TYPE OF BORING: Diacore to 0.06m, Solid flight auger to 3.2m, Rotary to 3.6m, NMLC Coring to 16.19m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sampleBD03/20200828, Bulk samples taken 0.6-1.0m & 1.5-3.0m, Groundwater well installed, refer to Well Log for construction details, Data logger 2121808 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD
EASTING: 337054.9
NORTHING: 6245642.4
DIP/AZIMUTH: 90°/--

BORE No: BH608
PROJECT No: 72505.18
DATE: 27 - 28/8/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
52.9	0.05	ASPHALTIC CONCRETE		E/D	0.1				Gatic cover Grout 0.0-1.0m
	0.2	FILL/ROADBASE: GRAVEL, coarse, dark grey, igneous, subangular-subrounded, dry		E/D	0.2 0.4				
	0.5	FILL/ GRAVEL: medium, yellow-brown, sandstone, with clay, sand, crushed sandstone, dry		E/D*	0.5 0.8				
52	1	FILL/SAND: fine to medium, brown, trace silt, and fine subangular igneous gravel, dry		S	1.0		1,1,1 N = 2		Backfill 0.1-1.75m
	1.5	SAND SP: fine to medium, yellow-brown, with clay, moist, loose, aeolian			1.45				
51	2			E/D	1.8 2.0				Bentonite 0.15-0.35m
	2.5	SANDSTONE: medium to coarse grained, pale yellow and red, very low then low strength, highly weathered, slightly fractured, Hawkesbury Sandstone		S	2.5 2.59		25/90 refusal		
50	3				2.75 2.8		PL(A) = 0.07		Blank pipe 0.1-2.75m
49	4			C	4.0		PL(A) = 0.08		
48	4.83								
	5				5.3		PL(A) = 0.19		
	5.02	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone			5.76				
47	6				6.0		PL(A) = 0.91		
46	7			C	7.0		PL(A) = 1		
45	8				8.0		PL(A) = 0.81		
					8.85				
44	9			C	9.0		PL(A) = 0.97		Gravel 0.5-3.0m Slotted PVC screen 0.5-3.0m
43					10.0		PL(A) = 1		

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 2.6m, HQ to 2.75m

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119607 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 52.9 AHD
EASTING: 337054.9
NORTHING: 6245642.4
DIP/AZIMUTH: 90°/--

BORE No: BH608
PROJECT No: 72505.18
DATE: 27 - 28/8/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
42	11	SANDSTONE: medium grained, pale grey, low then medium to high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*		C	11.1		PL(A) = 1.1		11
41	11.89				11.83				
	12				12.0		PL(A) = 1.2		12
40	13			C	13.0		PL(A) = 0.83		13
39	14				14.0		PL(A) = 0.75		14
					14.65				
38	15			C	15.0		PL(A) = 1.1		15
					15.2		PL(A) = 0.15		
37	16				16.0		PL(A) = 1.2		16
	16.33	Bore discontinued at 16.33m Target depth reached			16.33				End cap
36	17								17
35	18								18
34	19								19
33									

RIG: Bobcat **DRILLER:** JE **LOGGED:** TM **CASING:** HW to 2.6m, HQ to 2.75m

TYPE OF BORING: Diacore to 0.05m, Solid flight auger to 2.5m, Rotary to 2.75m, NMLC Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *Field replicate sample BD02/20200827, Bulk samples taken 0.5-1.5m & 1.5-2.5m, Groundwater well installed, refer to Well Log for construction details, Data logger 2119607 installed in well

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.5 AHD
EASTING: 337116
NORTHING: 6245624

PIT No: TP601
PROJECT No: 72505.19
DATE: 2/9/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
54	0.4	FILL/Silty SAND: fine to medium, brown, with rootlets, roots, trace clay, moist		A/E	0.1 0.3		PID < 1 ppm		
		FILL/SAND: fine to medium, pale brown, trace silt and fine to medium sandstone gravel, moist		A/E	0.6 0.8		PID < 1 ppm		
53	1.6			A/E	1.0 1.2		PID < 1 ppm		
	1.8	Clayey SAND SC: fine to medium, pale yellow-brown, moist, aeolian							
52	2	Pit discontinued at 1.8m Target depth reached							
51	3								
50	4								
49	5								
48	6								
47	7								
46	8								
45	9								

RIG: Vac Truck, Hand Tools

LOGGED: JJH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS: Coordinates are approximate based on visual feautes. Levels approximated from nearby boreholes (BH600 series)

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 54.5 AHD
EASTING: 337114
NORTHING: 6245613

PIT No: TP602
PROJECT No: 72505.19
DATE: 2/9/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
54	0.4	FILL/Silty SAND: fine to medium, brown, with rootlets, roots, trace clay, moist		A/E	0.1 0.3		PID < 1 ppm		
		FILL/SAND: fine to medium, pale brown, with fine to medium sandstone gravel, trace silt and rootlets, moist		A/E	0.7 0.9		PID < 1 ppm		
53	1.3			A/E	1.1 1.3		PID < 1 ppm		
		Pit discontinued at 1.3m Test location abandoned due to possible service							

RIG: Vac Truck, Hand Tools

LOGGED: JJH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS: Coordinates are approximate based on visual feautes. Levels approximated from nearby boreholes (BH600 series)

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 53.0 AHD
EASTING: 337110
NORTHING: 6245667

PIT No: TP603
PROJECT No: 72505.19
DATE: 3/9/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
53	0.1	ASPHALTIC CONCRETE							
	0.3	FILL/Sandy GRAVEL: fine, dark grey, igneous, fine to coarse sand, moist (roadbase)		A/E	0.3		PID < 1 ppm		
		FILL/SAND: fine to medium, grey-brown, trace fine sandstone and igneous gravel, moist			0.5				
52	1								1
	1.1	Clayey SAND SC: medium, orange-brown, moist, aeolian		A/E	1.2		PID < 1 ppm		
	1.4	Pit discontinued at 1.4m Test location abandoned due to services			1.4				
51	2								2
50	3								3
49	4								4
48	5								5
47	6								6
46	7								7
45	8								8
44	9								9

RIG: Vac Truck, Hand Tools

LOGGED: JJH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS: Coordinates are approximate based on visual feautes. Levels approximated from nearby boreholes (BH600 series)

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Lendlease Building Pty Ltd
PROJECT: SCH Stage 1 / CCCC Project
LOCATION: High Street and Hospital Road, Randwick

SURFACE LEVEL: 53.0 AHD
EASTING: 337120
NORTHING: 6245665

PIT No: TP604
PROJECT No: 72505.19
DATE: 7/9/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
53	0.1	ASPHALTIC CONCRETE							
		FILL/Sandy GRAVEL: fine, dark grey, igneous, fine to coarse sand, moist (roadbase)		A/E	0.2		PID < 1 ppm		
				A/E*	0.3		PID < 1 ppm		
					0.4				
	0.6	At 0.57m: Possible sandstone bedrock exposed at southern edge of pit			0.5				
52	1	Pit discontinued at 0.6m Target depth reached							
51	2								
50	3								
49	4								
48	5								
47	6								
46	7								
45	8								
44	9								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Vac Truck, Hand Tools

LOGGED: KR

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS: * BD1/20200907 taken. Coordinates are approximate based on visual feautes. Levels approximated from nearby boreholes (BH600 series)

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)
- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)
- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with ‘Mix of Soil and Cobbles/Boulders’ with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;
- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
  Soil tends to stick together.
  Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
  Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- ‘Moist, dry of plastic limit’ or ‘w <PL’ (i.e. hard and friable or powdery).
- ‘Moist, near plastic limit’ or ‘w ≈ PL (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- ‘Moist, wet of plastic limit’ or ‘w >PL’ (i.e. soils usually weakened and free water forms on the hands when handling).
- ‘Wet’ or ‘w ≈LL’ (i.e. near the liquid limit).
- ‘Wet’ or ‘w >LL’ (i.e. wet of the liquid limit).

Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured , usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Douglas Partners

Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

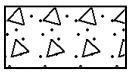
Symbols & Abbreviations

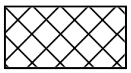
Graphic Symbols for Soil and Rock

General

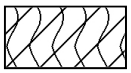
Asphalt

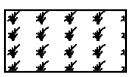
Road base

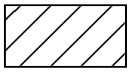

Concrete

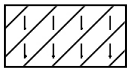

Filling

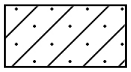
Soils


Topsoil

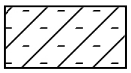

Peat

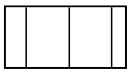

Clay

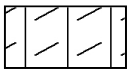

Silty clay

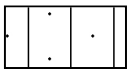

Sandy clay

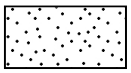
Gravelly clay

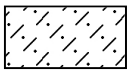

Shaly clay

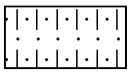

Silt


Clayey silt


Sandy silt

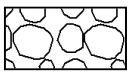

Sand

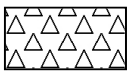

Clayey sand


Silty sand

Gravel

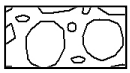
Sandy gravel


Cobbles, boulders

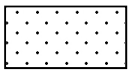

Talus

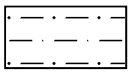
Sedimentary Rocks

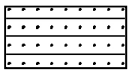
Boulder conglomerate

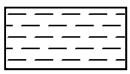

Conglomerate

Conglomeratic sandstone

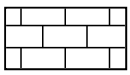

Sandstone


Siltstone

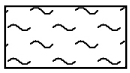

Laminite

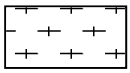

Mudstone, claystone, shale

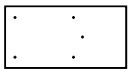
Coal


Limestone

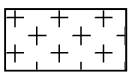
Metamorphic Rocks

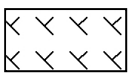

Slate, phyllite, schist

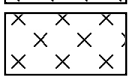

Gneiss

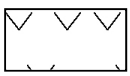

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia

Porphyry

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Geotechnics / Environment / Groundwater

Groundwater Field Sheet

Project and Bore Installation Details

Bore / Standpipe ID:	BH 608
Project Name:	
Project Number:	72505.19
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details

Date/Time:	
Purged By:	
GW Level (pre-purge):	m bgl
Observed Well Depth:	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry)
GW Level (post-purge):	m bgl
Equipment:	

Micropurge and Sampling Details

Date/Time:	8.9.20 8:00 am
Sampled By:	KR
Weather Conditions:	Sunny
GW Level (pre-purge):	3.28 m bgl (8:14 am)
Observed Well Depth:	16.04 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
GW Level (post sample):	3.43 m bgl 9:04 am - 3:43 m
Total Volume Purged:	L
Equipment:	INTERFACE METER

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity NTU	MV
Stabilisation Criteria (3 readings)	**0.1° C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	
1:50 min	20.2	1.93	583uS	5.55		104
2:50 min	21.3	1.59	495	5.67	67	102
3:50 min	21.5	1.49	491	5.69	68	101
4:50 min	21.6	1.49	475	5.70	260	101
5:50 min	21.7	1.41	481	5.70	174	102
6:50 min	21.7	1.39	409	5.70	267	103
7:50 min	21.7	1.34	428	5.71	289	106
8:50 min	21.7	1.34	461	5.71	300	107
9:50 min	21.8	1.35	456	5.71	315	106
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Start 8:35 am

Sample Details

Sampling Depth (rationale):	~10.0 m bgl,
Sample Appearance (e.g. colour, siltiness, odour):	Clear, slightly cloudy
Sample ID:	
QA/QC Samples:	Duplicate - BD/20200908
Sampling Containers and filtration:	
Comments / Observations:	

BD/20200908

Douglas Partners
Geotechnics / Environment / Groundwater

Groundwater Field Sheet

Project and Bore Installation Details

Bore / Standpipe ID:	BH12
Project Name:	72505.19
Project Number:	
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details

Date/Time:	
Purged By:	
GW Level (pre-purge):	m bgl
Observed Well Depth:	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry)
GW Level (post-purge):	m bgl
Equipment:	

Micropurge and Sampling Details

Date/Time:	11:30 8.9.25
Sampled By:	KR
Weather Conditions:	Sunny
GW Level (pre-purge):	5.88 m bgl
Observed Well Depth:	6.54 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
GW Level (post sample):	DRY m bgl
Total Volume Purged:	1 steel bucket
Equipment:	

1.7
3.4
5.1

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	mV
Stabilisation Criteria (3 readings)	***0.1° C***	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	
Start 1:50pm 2:00 min	32.8	3.24	534 µS	8.8		84
3:00 min	27.9	3.54	571	8.76	57.9	83
5:00 min	25.4	4.05	581	8.68	79	95
7:00 min	24.3	4.40	579	8.47	2195	109
11:00 min	23.8	4.13	571	8.31	1261	109
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	6.4m m bgl,
Sample Appearance (e.g. colour, siltiness, odour):	Brown, cloudy
Sample ID:	
QA/QC Samples:	
Sampling Containers and filtration:	
Comments / Observations:	Water taken from bucket used during purging

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Groundwater Field Sheet

Project and Bore Installation Details

Bore / Standpipe ID:	BH13
Project Name:	
Project Number:	72505.19
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details

Date/Time:	
Purged By:	
GW Level (pre-purge):	m bgl
Observed Well Depth:	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry)
GW Level (post-purge):	m bgl
Equipment:	

Micropurge and Sampling Details

Date/Time:	8-9-20 , 1pm
Sampled By:	KR
Weather Conditions:	Sunny
GW Level (pre-purge):	3.36 m bgl 1:02pm (silty)
Observed Well Depth:	3.80 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Estimated Bore Volume:	L
GW Level (post sample):	DRY m bgl
Total Volume Purged:	0.5 steel bucket
Equipment:	

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	***0.1° C***	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	
Start 1:14pm 2:00 min	36.2	3.95	606 µS	7.37		121 mV
3:00 min	29.7	3.65	646	6.71		129 mV
4:00 min	25.8	3.58	675	6.43		139
5:00 min	24.0	4.24	678	6.27		146
6:00 min	23.9	4.35	676	6.25		149
7:00 min	23.9	4.68	673	6.25		149
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	m bgl,
Sample Appearance (e.g. colour, siltiness, odour):	almost clear, slightly yellow-brown
Sample ID:	
QA/QC Samples:	
Sampling Containers and filtration:	
Comments / Observations:	Water sample taken from steel bucket used during purging. Data-logger placed back in 2:00pm

Douglas Partners
Geotechnics / Environment / Groundwater

TPS FLT90 CALIBRATION RECORD

Serial Number: 428561

DP Identification No.

Project:

Project Number: 72505.19

PARAMETER	STANDARD	PRE CALIBRATION READING		POST CALIBRATION READING	
Temperature	* 23.0		degrees C		degrees C
pH	10	10	pH units	10.00	pH units
	7	7.1	pH units	7.00	pH units
	4	3.81	pH units	4.00	pH units
Conductivity	0.0** uS/cm	0	µS/cm	0	µS/cm
	2.76 mS/cm	2.606	mS/cm	2760	mS/cm
	12.88 mS/cm		mS/cm		mS/cm
TDS	0.0** ppm		ppm		ppm
	36.0 ppk		ppk		ppk
Dissolved Oxygen	0.0% sat		ppm		
		-1.7	%	0	%
	100.0**% sat		ppm		
		112	%	100	%
Turbidity	0*** NTU		NTU		NTU
	90 NTU	90.9	NTU	90	NTU
ORP #	240 mV	241.2	mV	-	mV

Calibrated by: KR

Date: 7.4.20 ← Wrong date. Actual date is 7.9.20

* use NATA certified reference thermometer from soils clean lab
** air
*** distilled water
# factory calibrated – do a bump test

NOTES:

Form Updated 1 September 2017

Appendix F

Site Assessment Criteria

Site Assessment Criteria

S1. Soil Investigation Levels

S1.1 Health Investigation Levels

The Health Investigation Levels (HIL) and Health Screening Levels (HSL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HIL are applicable to assessing health risk arising *via* all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface. Site-specific conditions may determine the depth to which HILs apply for other land uses.

HSL are applicable to selected petroleum compounds and fractions to assess the risk to human health via inhalation and direct contact pathways. HSL have been developed for different land uses, soil types and depths to contamination.

The generic HIL and HSL are considered to be appropriate for the assessment of contamination at the site. Given the proposed land use and based on the CSM the adopted HIL and HSL are:

- **HIL-B & HSL-B** – Residential (hospital)
- **HIL-D & HSL D** – Commercial Industrial (proposed roads)

Health screening levels for the vapour intrusion pathway have been conservatively adopted.

Table S1 shows the HILs that have been adopted by NEPC (2013) Schedule B1, Table 1A(1). Table S1 only includes contaminants to be analysed during the current investigations and contaminants adopted as initial screening indicators, not the full list provided in NEPC (2013).

Table S1: Health Investigation Levels

Contaminant	HIL B (mg/kg)	HIL D (mg/kg)
Metals and Inorganics		
Arsenic	500	3,000
Cadmium	150	900
Chromium (IV)	500	3,600
Copper	30,000	240,000
Lead	1,200	1,500
Mercury (inorganic)	120	730
Nickel	1,200	6,000
Zinc	60,000	400,000

Contaminant	HIL B (mg/kg)	HIL D (mg/kg)
PAH		
Carcinogenic PAH (as benzo(a)pyrene TEQ) [1]	4	40
Total PAH	400	4,000
Phenols		
Pentachlorophenol (used as an initial screen)	130	660
OCP		
DDT + DDD + DDE	600	3,600
Aldrin + Dieldrin	10	45
Chlordane	90	530
Endosulfan (total)	400	2,000
Endrin	20	100
Hepatchlor	10	50
HCB	15	80
Methoxychlor	500	2,500
Other Pesticides		
Chlorpyrifos	340	2,000
Other Organics		
PCB [2]	1	7

Notes:

1 Sum of carcinogenic PAH.

2 Non dioxin-like PCBs only.

Table S2 shows petroleum hydrocarbon compounds adopted from NEPC (2013) Schedule B1, Table 1A(3). The HSLs are based on overlying soil type and depth. Vapour intrusion HSLs for sand) have been used based on the fill encountered at the site (refer to borehole logs, Appendix E). Given the general depth of fill encountered in the investigation during the intrusive works, and using the most conservative values, the depth range of 0 m to <1 m has been used.

Table S2: Soil Health Screening Levels for Vapour Intrusion

Contaminant	Soil Type	HSL A & B – Vapour Intrusion (mg/kg)	HSL D – Vapour Intrusion (mg/kg)
		Depth 0 m to <1m	Depth 0 m to <1m
Toluene	Sand	160	NL
Ethylbenzene		55	NL
Xylenes		40	NL
Naphthalene		3	NL
Benzene		0.5	3
TRH C_6-C_{10} less BTEX [F1]		40	260
TRH >C_{10}-C_{16} less naphthalene [F2]		230	NL

Notes: NL Not limiting

Direct contact HSL have been adopted from the CRC Care Technical Report No. 10 (Friebel and Nadebaum 2019) and are summarised in below Table S3.

Table S3: Soil Health Screening Levels for Direct Contact

Contaminant	HSL B – Direct Contact (mg/kg)	HSL D – Direct Contact (mg/kg)
Toluene	21,000	99,000
Ethylbenzene	5,900	27,000
Xylenes	17,000	81,000
Naphthalene	2,200	11,000
Benzene	140	430
C_6 – C_{10}	5,600	26,000
C_{10}-C_{16}	4,200	20,000
C_{16}-C_{34}	5,800	27,000
C_{34}-C_{40}	8,100	38,000

S1.2 Ecological Investigation and Screening Levels

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

The EIL is calculated using the following formula:

EIL = ABC + ACL

The ABC is determined through direct measurement at an appropriate reference site (preferred) or through the use of methods defined by Olszowy et al *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia 1995 (Olszowy, 1995) or Hamon et al, *Geochemical indices allow estimation of heavy metal background concentrations in soils*, Global Biogeochemical Cycles, vol. 18, GB1014, (Hamon, 2004). ACL is based on the soil characteristics of pH, CEC and clay content.

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. An *Interactive (Excel) Calculation Spreadsheet* may be used for calculating site-specific EIL for these contaminants, and has been provided in the ASC NEPM Toolbox available on the NEPC website (http://www.nepc.gov.au/nepms/assessment-site-contamination/toolbox).

The adopted EIL, derived from the *Interactive (Excel) Calculation Spreadsheet* are shown in the following Table S4. The following site specific data and assumptions have been used to determine the EILs:

- The EILs will apply to the top 2 m of the soil profile;
- Given the likely source of soil contaminants (i.e., historical site use/fill) the contamination is considered as “aged” (>2 years); and
- ABCs have been derived using the *Interactive (Excel) Calculation Spreadsheet* using input parameters of aged soil, CEC of 2.1 $cmol_c/kg$ and pH of 6.1 with high traffic and clay content of 15%.

Table S4: Ecological Investigation Levels (EIL) in mg/kg

Analyte		EIL (Urban residential and public open space)	EIL (Commercial Industrial)	Comments
Metals	Arsenic	100	160	Adopted averaged pH of 6.1 and CEC of 2.1 $cmol_c/kg$ based on current and previous results; approximate clay content 1% (refer to borehole logs, Appendix E), high traffic area (NSW).
	Chromium III	470	770	
	Copper	65	80	
	Lead	1,100	1800	
	Nickel	9	10	
	Zinc	240	300	
PAH	Naphthalene	170	370	
OCP	DDT	180	640	

Ecological Screening Levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. ESL apply to the top 2 m of the soil profile as for EIL.

ESL have been derived in NEPC (2013) for petroleum fractions F1 to F4 as well as BTEX and Benzo(a)pyrene. Site specific data and assumptions as summarised in Table S5 have been used to determine the ESL. The adopted ESL, from Table 1B(6), Schedule B1 of NEPC (2013) are shown in Table S6.

Table S5: Inputs to the Derivation of ESL

Variable	Input	Rationale
Depth of ESL application	Top 2 m of the soil profile	The top 0 - 1 m depth below ground level corresponds to the root zone and habitation zone of many species.
Land use	Commercial / Industrial	Site is proposed/used for a road, loading docks and associated infrastructure for the adjacent hospital
Soil Texture	Coarse	Based on findings noted in the borehole logs (refer to Appendix E).

Table S6: Ecological Screening Levels (ESL) in mg/kg

Analyte		ESL (urban residential and public open space)	ESL (commercial and industrial)	Comments
TRH	C6 – C10 (less BTEX) [F1]	180*	215*	All ESLs are low reliability apart from those marked with * which are moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	170*	
	>C16-C34 [F3]	300	1,700	
	>C34-C40 [F4]	2,800	3,300	
BTEX	Benzene	50	75	
	Toluene	85	135	
	Ethylbenzene	70	165	
	Xylenes	105	180	
PAH	Benzo(a)pyrene	0.7	1.4	

In addition, given the low reliability of the benzo(a)pyrene ESL in NEPC (2013) reference has been made to Table 11 of the CRC Care Technical Report No.39 *Risk-Based Remediation Guidance for Benzo(a)pyrene* March 2017 (CRC, 2017). CRC (2017) indicates a high reliability ecological guideline for fresh B(a)P of 33 mg/kg (and 95% confidence interval range of 21 mg/kg to 135 mg/kg) for urban residential and public open space.

S1.3 Management Limits

NEPC (2013) Table 1B(7) provides 'management limits' for TRH fractions, which are applied after consideration of relevant HSLs. The management limits have been adopted to avoid or minimise the following potential effects of petroleum hydrocarbons:

- Formation of non-aqueous phase liquids (NAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services by hydrocarbons.

The presence of site TRH contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdictional requirements. The adopted management limits are presented in Table S7 based upon the CSM and encountered subsurface conditions. Coarse texture management limits have been adopted based on findings noted in the borehole logs (refer to Appendix E).

Table S7: Management Limits for TRH Fractions in Soil in mg/kg

TRH Fraction	Soil Texture	Management Limits (residential, parkland and public open space)	Management Limits (commercial and industrial)
C_6-C_{10} [F1]	Coarse	700	700
>C_{10}-C_{16} [F2]	Coarse	1,000	1,000
>C_{16}-C_{34} [F3]	Coarse	2,500	3,500
>C_{34}-C_{40} [F4]	Coarse	10,000	10,000

S1.4 Asbestos in Soil

Bonded asbestos-containing material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites;
- Commonly occurring in historical fill containing unsorted demolition materials; and
- Importation of asbestos contaminated building products from China.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and / or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

NEPC (2013) Table 7 provides health screening levels for asbestos in soil which are based on scenario-specific likely exposure levels, adopted from the WA DoH (2007) guidelines, summarised below in Table S8.

Table S8: Health screening levels for asbestos in soil (w/w %)

Form of asbestos	Health Screening Level (Residential B)	Health Screening Level (Commercial/Industrial D)
Bonded ACM	0.04%	0.05%
FA and AF	0.001%	
All forms of asbestos	No visible asbestos for surface soil	

The SAC to be adopted for the assessment of asbestos in the current investigation is no asbestos detected at the laboratory reporting limit of 0.1 g/kg as an initial screen given the adopted sampling techniques (boreholes and limited access NDD test pits).

S1.5 Groundwater

The potential receptors of impacted groundwater from the site include:

- Workers conducting excavations, construction or maintenance works within the site or nearby the site; and
- Receiving down-gradient groundwater body (freshwater)

S1.5.1 Groundwater Investigation Levels

Groundwater investigation levels (GIL) adopted in NEPC (2013) are based on the ANZECC & ARMCANZ (2000) water quality guidelines, however, it is noted that the ANZECC & ARMCANZ (2000) guidelines have since been superseded by the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). Accordingly, groundwater analytical results have been assessed against the ANZG (2018) guidelines for this investigation. The 95% Level of Protection (LOP) has been adopted with the exception of contaminants with the potential to bioaccumulate, which have been assessed with reference to the 99% LOP.

The adopted GIL for the analytes included in the assessment (where applicable), and the corresponding source documents, are shown in Table S9 below.

.

Table S9: Groundwater Investigation Levels

Contaminant	GIL, Marine Waters (mg/L) ANZG (2018)
Metals	
Arsenic (III/IV)	24/42
Cadmium	0.2
Chromium (III/IV)	3.3/1
Copper	1.4
Lead	3.4
Mercury (inorganic)	0.06
Nickel	11
Zinc	8
BTEX	
Benzene	950
Toluene	180
Ethylbenzene	80
m- / p-Xylene	75 / 200
o Xylene	350
PAH	
benzo(a)pyrene	0.0001
naphthalene	0.016
Phenols	
Pentachlorophenol (used as an initial screen)	0.0036
OCP	
Aldrin (used as an initial screen)	0.000001
OPP	
Chlorpyrifos(used as an initial screen)	0.00001
Other Organics	
PCB (Aroclor 1242 as conservative screen)	0.0003
VOC	
1,1,2-Trichloroethane	0.0065
1,2,3-Trichlorobenzene	0.003
1,2,4-Trichlorobenzene	0.085
1,2-Dichlorobenzene	0.16
1,4-Dichlorobenzene	0.06

S1.5.1 Health Screening Levels - Petroleum Hydrocarbons

The generic groundwater HSL for vapour intrusion are published in NEPC (2013). Table S9 summarises the adopted HSL along with the relevant assumptions used in selecting the appropriate limits.

Table S10: Groundwater HSL for Vapour Intrusion (mg/L)

Analyte	HSL A & HSL B	HSL D	Comments
Toluene	NL	NL	Depth of groundwater encountered 2 - 4 m Sand chosen as the most conservative value given variability of fill encountered
Ethylbenzene	NL	NL	
Xylenes	NL	NL	
Naphthalene	NL	NL	
Benzene	0.8	5	
C_6-C_{10} [F1]	1	6	
>C_{10}-C_{16} [F2]	1	NL	

Appendix G

Laboratory Documentation

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

CERTIFICATE OF ANALYSIS 232763

Client Details

Client	Douglas Partners Pty Ltd
Attention	Amelia Dani, Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.16, POWH**
Number of Samples	68 Soil, 1 Water
Date samples received	10/12/2019
Date completed instructions received	11/12/2019

Analysis Details

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

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

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

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

Report Details

Date results requested by	12/12/2019
Date of Issue	12/12/2019

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Asbestos Approved By

Analysed by Asbestos Approved Identifier: Panika Wongchanda, Lucy Zhu

Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Josh Williams, Senior Chemist

Loren Bardwell, Senior Chemist

Lucy Zhu, Senior Asbestos Analyst

Nick Sarlamis, Inorganics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		232763-2	232763-7	232763-8	232763-10	232763-12
Your Reference	UNITS	S2-TP14	S2-TP18	S2-TP19	S2-TP20	S2-TP21
Depth		0-0.2	0.3-0.5	0.2	0-0.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	94	101	98	95	96

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		232763-19	232763-20	232763-21	232763-22	232763-24
Your Reference	UNITS	S2-TP24	S2-TP25	S2-TP25	S2-TP26	S2-TP27
Depth		0.5-0.7	0-0.2	0.3-0.5	0-0.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	101	106	108	106	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		232763-32	232763-36	232763-38	232763-42	232763-46
Your Reference	UNITS	S2-TP10	S2-TP12	S2-TP13	S2-TP2	S2-TP3
Depth		0-0.1	0.0-0.2	0.5-0.7	0-0.1	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	96	108	106	115	109

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		232763-49	232763-50	232763-53
Your Reference	UNITS	TS	TB	S2-TP6
Depth		.	.	0.9-1.0
Type of sample		Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019
TRH C_6 - C_9	mg/kg	[NA]	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	[NA]	<25
Benzene	mg/kg	100%	<0.2	<0.2
Toluene	mg/kg	100%	<0.5	<0.5
Ethylbenzene	mg/kg	97%	<1	<1
m+p-xylene	mg/kg	94%	<2	<2
o-Xylene	mg/kg	97%	<1	<1
naphthalene	mg/kg	[NA]	<1	<1
Total +ve Xylenes	mg/kg	[NA]	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	100	109	94

svTRH (C10-C40) in Soil						
Our Reference		232763-2	232763-7	232763-8	232763-10	232763-12
Your Reference	UNITS	S2-TP14	S2-TP18	S2-TP19	S2-TP20	S2-TP21
Depth		0-0.2	0.3-0.5	0.2	0-0.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	12/12/2019	12/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	87	81	90	89

svTRH (C10-C40) in Soil						
Our Reference		232763-19	232763-20	232763-21	232763-22	232763-24
Your Reference	UNITS	S2-TP24	S2-TP25	S2-TP25	S2-TP26	S2-TP27
Depth		0.5-0.7	0-0.2	0.3-0.5	0-0.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	88	92	91	69	91

svTRH (C10-C40) in Soil						
Our Reference		232763-32	232763-36	232763-38	232763-42	232763-46
Your Reference	UNITS	S2-TP10	S2-TP12	S2-TP13	S2-TP2	S2-TP3
Depth		0-0.1	0.0-0.2	0.5-0.7	0-0.1	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	98	93	92	83	88

svTRH (C10-C40) in Soil		
Our Reference		232763-53
Your Reference	UNITS	S2-TP6
Depth		0.9-1.0
Type of sample		Soil
Date extracted	-	11/12/2019
Date analysed	-	12/12/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	89

PAHs in Soil						
Our Reference		232763-1	232763-2	232763-3	232763-4	232763-5
Your Reference	UNITS	S2-TP14	S2-TP14	S2-TP15	S2-TP15	S2-TP16
Depth		1.2-1.5	0-0.2	0.8-1.0	1.8-2.0	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.3	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.8	1.0	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.9	1.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.6	0.7	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.5	0.9	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.8	1	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.57	0.60	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.3	0.4	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	5.1	6.4	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.7	0.8	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.8	0.9	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.8	0.9	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	87	103	92	85	83

PAHs in Soil						
Our Reference		232763-6	232763-7	232763-8	232763-9	232763-10
Your Reference	UNITS	S2-TP16	S2-TP18	S2-TP19	S2-TP19	S2-TP20
Depth		1.0-1.2	0.3-0.5	0.2	0.4-0.6	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	0.3	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	87	92	107	88	99

PAHs in Soil						
Our Reference		232763-11	232763-12	232763-13	232763-14	232763-15
Your Reference	UNITS	S2-TP20	S2-TP21	S2-TP21	S2-TP22	S2-TP22
Depth		0.3-0.5	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	0.2	0.4	0.1
Pyrene	mg/kg	0.2	<0.1	0.2	0.3	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Chrysene	mg/kg	0.1	<0.1	0.2	0.2	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	0.08	<0.05	0.1	0.2	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Total +ve PAH's	mg/kg	0.52	<0.05	1.3	1.9	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	91	102	95	93	89

PAHs in Soil						
Our Reference		232763-16	232763-17	232763-18	232763-19	232763-20
Your Reference	UNITS	S2-TP23	S2-TP23	S2-TP24	S2-TP24	S2-TP25
Depth		0-0.2	0.3-0.5	0-0.2	0.5-0.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	12/12/2019	12/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.1	0.2	0.3
Pyrene	mg/kg	<0.1	0.3	0.2	0.2	0.3
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.1	0.1	0.1
Chrysene	mg/kg	<0.1	0.2	0.2	0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	0.2	0.4	<0.2
Benzo(a)pyrene	mg/kg	0.05	0.2	0.1	0.2	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.1	0.2	<0.1
Total +ve PAH's	mg/kg	0.05	1.6	1.0	1.6	1.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	92	99	102	99

PAHs in Soil						
Our Reference		232763-21	232763-22	232763-23	232763-24	232763-25
Your Reference	UNITS	S2-TP25	S2-TP26	S2-TP26	S2-TP27	S2-TP28
Depth		0.3-0.5	0-0.2	0.3	0-0.2	0.02
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	11/12/2019	12/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	0.1	<0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.06	0.1	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	0.80	<0.05	0.2	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	95	94	104	91

PAHs in Soil						
Our Reference		232763-26	232763-27	232763-28	232763-29	232763-30
Your Reference	UNITS	S2-TP28	S2-TP8	S2-TP8	S2-TP8	S2-TP9
Depth		0.6-0.8	0-0.2	0.8-1.0	2.5-2.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	0.4	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.7	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	0.7	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	0.4	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	0.5	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.2	0.5	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.1	0.3	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	1.3	3.7	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	87	89	97	89	90

PAHs in Soil						
Our Reference		232763-31	232763-32	232763-33	232763-34	232763-35
Your Reference	UNITS	S2-TP9	S2-TP10	S2-TP10	S2-TP10	S2-TP11
Depth		0.8-1.0	0-0.1	1.5	2.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	12/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.3	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2	0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.1	0.1	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.4	0.58	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	98	82	94	88

PAHs in Soil						
Our Reference		232763-36	232763-37	232763-38	232763-39	232763-40
Your Reference	UNITS	S2-TP12	S2-TP12	S2-TP13	S2-TP14	S2-TP1
Depth		0.0-0.2	0.8-1.0	0.5-0.7	0.3-0.5	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	11/12/2019	12/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthylene	mg/kg	0.2	<0.1	<0.1	0.3	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	0.1	<0.1	1	<0.1
Anthracene	mg/kg	0.2	<0.1	<0.1	0.4	<0.1
Fluoranthene	mg/kg	1.6	0.3	0.2	3.7	<0.1
Pyrene	mg/kg	1.9	0.4	0.2	4.3	<0.1
Benzo(a)anthracene	mg/kg	1.2	0.3	0.1	2.9	<0.1
Chrysene	mg/kg	1.2	0.3	0.1	3.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	2	0.3	0.2	3.8	<0.2
Benzo(a)pyrene	mg/kg	1.2	0.2	0.2	2.7	0.08
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.1	<0.1	1.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.2	<0.1	<0.1	0.2	<0.1
Benzo(g,h,i)perylene	mg/kg	0.7	0.1	0.1	1.4	<0.1
Total +ve PAH's	mg/kg	11	2.1	1.2	25	0.08
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.8	<0.5	<0.5	3.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.8	<0.5	<0.5	3.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.8	<0.5	<0.5	3.7	<0.5
Surrogate p-Terphenyl-d14	%	101	91	102	95	93

PAHs in Soil						
Our Reference		232763-41	232763-42	232763-43	232763-44	232763-46
Your Reference	UNITS	BD1 2019 1205	S2-TP2	S2-TP2	S2-TP2	S2-TP3
Depth		.	0-0.1	0.1-0.2	1.4-1.5	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	12/12/2019	11/12/2019	11/12/2019	12/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	96	90	83	92

PAHs in Soil						
Our Reference		232763-47	232763-48	232763-51	232763-52	232763-53
Your Reference	UNITS	S2-TP4	S2-TP4	S2-TP5	S2-TP6	S2-TP6
Depth		0-0.2	0.9-1.0	0.4-0.6	0-0.2	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	12/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.3	2.5	0.7
Anthracene	mg/kg	<0.1	<0.1	0.1	0.6	0.2
Fluoranthene	mg/kg	0.1	<0.1	1.2	3.8	1.4
Pyrene	mg/kg	0.2	<0.1	1.4	3.5	1.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	1	1.8	0.7
Chrysene	mg/kg	0.1	<0.1	1.2	1.9	0.7
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	1	2	1
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.81	1.2	0.63
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.4	0.5	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	0.5	0.6	0.4
Total +ve PAH's	mg/kg	0.51	<0.05	8.1	19	7.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.1	1.8	0.9
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.1	1.8	0.9
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.2	1.8	0.9
Surrogate p-Terphenyl-d14	%	93	95	98	100	99

PAHs in Soil					
Our Reference		232763-54	232763-55	232763-59	232763-67
Your Reference	UNITS	S2-TP7	S2-TP7	BD2/2019 1210	S2-TP23
Depth		0-0.2	0.8-1.0	.	0.8-1.0
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.6	0.3	<0.1
Anthracene	mg/kg	<0.1	0.2	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	1.1	0.9	0.2
Pyrene	mg/kg	<0.1	1.2	1.0	0.2
Benzo(a)anthracene	mg/kg	<0.1	0.6	0.6	0.1
Chrysene	mg/kg	<0.1	0.7	0.9	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.8	0.8	0.2
Benzo(a)pyrene	mg/kg	<0.05	0.5	0.5	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.3	0.3	0.1
Total +ve PAH's	mg/kg	<0.05	6.2	5.6	1.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.6	0.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.7	0.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.7	0.8	<0.5
Surrogate p-Terphenyl-d14	%	92	94	91	87

Organochlorine Pesticides in soil						
Our Reference		232763-2	232763-8	232763-10	232763-12	232763-19
Your Reference	UNITS	S2-TP14	S2-TP19	S2-TP20	S2-TP21	S2-TP24
Depth		0-0.2	0.2	0-0.2	0-0.2	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	12/12/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	107	95	102	101

Organochlorine Pesticides in soil						
Our Reference		232763-20	232763-21	232763-22	232763-24	232763-32
Your Reference	UNITS	S2-TP25	S2-TP25	S2-TP26	S2-TP27	S2-TP10
Depth		0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	0.8	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	0.7	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	95	101	95

Organochlorine Pesticides in soil						
Our Reference		232763-36	232763-38	232763-42	232763-46	232763-53
Your Reference	UNITS	S2-TP12	S2-TP13	S2-TP2	S2-TP3	S2-TP6
Depth		0.0-0.2	0.5-0.7	0-0.1	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	1.2	<0.1	<0.1	<0.1	0.3
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	1.3	<0.1	<0.1	<0.1	0.2
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	100	95	90	99

Organophosphorus Pesticides						
Our Reference		232763-2	232763-8	232763-10	232763-12	232763-19
Your Reference	UNITS	S2-TP14	S2-TP19	S2-TP20	S2-TP21	S2-TP24
Depth		0-0.2	0.2	0-0.2	0-0.2	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	12/12/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	107	95	102	101

Organophosphorus Pesticides						
Our Reference		232763-20	232763-21	232763-22	232763-24	232763-32
Your Reference	UNITS	S2-TP25	S2-TP25	S2-TP26	S2-TP27	S2-TP10
Depth		0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	95	101	95

Organophosphorus Pesticides						
Our Reference		232763-36	232763-38	232763-42	232763-46	232763-53
Your Reference	UNITS	S2-TP12	S2-TP13	S2-TP2	S2-TP3	S2-TP6
Depth		0.0-0.2	0.5-0.7	0-0.1	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	100	95	90	99

PCBs in Soil						
Our Reference		232763-2	232763-8	232763-10	232763-12	232763-19
Your Reference	UNITS	S2-TP14	S2-TP19	S2-TP20	S2-TP21	S2-TP24
Depth		0-0.2	0.2	0-0.2	0-0.2	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	12/12/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	107	95	102	101

PCBs in Soil						
Our Reference		232763-20	232763-21	232763-22	232763-24	232763-32
Your Reference	UNITS	S2-TP25	S2-TP25	S2-TP26	S2-TP27	S2-TP10
Depth		0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	95	101	95

PCBs in Soil						
Our Reference		232763-36	232763-38	232763-42	232763-46	232763-53
Your Reference	UNITS	S2-TP12	S2-TP13	S2-TP2	S2-TP3	S2-TP6
Depth		0.0-0.2	0.5-0.7	0-0.1	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	100	95	90	99

Acid Extractable metals in soil						
Our Reference		232763-1	232763-2	232763-3	232763-4	232763-5
Your Reference	UNITS	S2-TP14	S2-TP14	S2-TP15	S2-TP15	S2-TP16
Depth		1.2-1.5	0-0.2	0.8-1.0	1.8-2.0	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	3	3	2	5
Copper	mg/kg	<1	8	17	5	11
Lead	mg/kg	3	83	100	11	9
Mercury	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Nickel	mg/kg	<1	2	1	<1	2
Zinc	mg/kg	170	86	140	10	12

Acid Extractable metals in soil						
Our Reference		232763-6	232763-7	232763-8	232763-9	232763-10
Your Reference	UNITS	S2-TP16	S2-TP18	S2-TP19	S2-TP19	S2-TP20
Depth		1.0-1.2	0.3-0.5	0.2	0.4-0.6	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	4	8	3	9
Copper	mg/kg	<1	7	4	11	4
Lead	mg/kg	5	8	9	86	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	1	3	2	3
Zinc	mg/kg	6	8	18	81	21

Acid Extractable metals in soil						
Our Reference		232763-11	232763-12	232763-13	232763-14	232763-15
Your Reference	UNITS	S2-TP20	S2-TP21	S2-TP21	S2-TP22	S2-TP22
Depth		0.3-0.5	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	4	7	2	5	3
Copper	mg/kg	12	3	11	4	8
Lead	mg/kg	56	9	130	16	48
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	2	2	1	1
Zinc	mg/kg	59	19	140	26	78

Acid Extractable metals in soil						
Our Reference		232763-16	232763-17	232763-18	232763-19	232763-20
Your Reference	UNITS	S2-TP23	S2-TP23	S2-TP24	S2-TP24	S2-TP25
Depth		0-0.2	0.3-0.5	0-0.2	0.5-0.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	4	4	6	4	6
Copper	mg/kg	7	16	4	9	4
Lead	mg/kg	35	110	10	89	12
Mercury	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	2	2	2	2	2
Zinc	mg/kg	39	370	17	110	23

Acid Extractable metals in soil						
Our Reference		232763-21	232763-22	232763-23	232763-24	232763-25
Your Reference	UNITS	S2-TP25	S2-TP26	S2-TP26	S2-TP27	S2-TP28
Depth		0.3-0.5	0-0.2	0.3	0-0.2	0.02
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	6	4	5	4
Copper	mg/kg	7	4	7	6	16
Lead	mg/kg	50	8	23	11	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	2	1	1	1
Zinc	mg/kg	44	22	43	13	10

Acid Extractable metals in soil						
Our Reference		232763-26	232763-27	232763-28	232763-29	232763-30
Your Reference	UNITS	S2-TP28	S2-TP8	S2-TP8	S2-TP8	S2-TP9
Depth		0.6-0.8	0-0.2	0.8-1.0	2.5-2.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	3	2	6	3
Copper	mg/kg	<1	7	6	<1	1
Lead	mg/kg	2	48	42	5	4
Mercury	mg/kg	<0.1	0.5	0.3	<0.1	<0.1
Nickel	mg/kg	<1	<1	<1	<1	<1
Zinc	mg/kg	6	30	30	14	5

Acid Extractable metals in soil						
Our Reference		232763-31	232763-32	232763-33	232763-34	232763-35
Your Reference	UNITS	S2-TP9	S2-TP10	S2-TP10	S2-TP10	S2-TP11
Depth		0.8-1.0	0-0.1	1.5	2.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	3	4	1	2
Copper	mg/kg	4	3	<1	<1	<1
Lead	mg/kg	27	8	7	<1	3
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	1	1	<1	<1
Zinc	mg/kg	35	10	6	<1	3

Acid Extractable metals in soil						
Our Reference		232763-36	232763-37	232763-38	232763-39	232763-40
Your Reference	UNITS	S2-TP12	S2-TP12	S2-TP13	S2-TP14	S2-TP1
Depth		0.0-0.2	0.8-1.0	0.5-0.7	0.3-0.5	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	3	1	4	3
Copper	mg/kg	7	1	3	13	3
Lead	mg/kg	41	10	23	100	15
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	1	1	<1	2	<1
Zinc	mg/kg	64	17	57	170	25

Acid Extractable metals in soil						
Our Reference		232763-41	232763-42	232763-43	232763-44	232763-46
Your Reference	UNITS	BD1 2019 1205	S2-TP2	S2-TP2	S2-TP2	S2-TP3
Depth		.	0-0.1	0.1-0.2	1.4-1.5	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	16	11	11	3
Copper	mg/kg	3	12	7	<1	2
Lead	mg/kg	14	13	13	4	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	6	5	<1	2
Zinc	mg/kg	25	35	25	2	14

Acid Extractable metals in soil						
Our Reference		232763-47	232763-48	232763-51	232763-52	232763-53
Your Reference	UNITS	S2-TP4	S2-TP4	S2-TP5	S2-TP6	S2-TP6
Depth		0-0.2	0.9-1.0	0.4-0.6	0-0.2	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	4	3	3	2	3
Copper	mg/kg	3	2	6	4	7
Lead	mg/kg	18	14	19	31	39
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	1	1	<1	1
Zinc	mg/kg	30	24	62	28	39

Acid Extractable metals in soil						
Our Reference		232763-54	232763-55	232763-59	232763-67	232763-70
Your Reference	UNITS	S2-TP7	S2-TP7	BD2/2019 1210	S2-TP23	S2-TP12 - [TRIPLICATE]
Depth		0-0.2	0.8-1.0	.	0.8-1.0	0.8-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	3	4	4	3
Copper	mg/kg	2	5	18	15	3
Lead	mg/kg	8	37	130	55	17
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	2	1	2	2	1
Zinc	mg/kg	19	53	100	94	34

Misc Soil - Inorg						
Our Reference		232763-2	232763-8	232763-10	232763-12	232763-19
Your Reference	UNITS	S2-TP14	S2-TP19	S2-TP20	S2-TP21	S2-TP24
Depth		0-0.2	0.2	0-0.2	0-0.2	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		232763-20	232763-21	232763-22	232763-24	232763-32
Your Reference	UNITS	S2-TP25	S2-TP25	S2-TP26	S2-TP27	S2-TP10
Depth		0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		232763-36	232763-38	232763-42	232763-46	232763-53
Your Reference	UNITS	S2-TP12	S2-TP13	S2-TP2	S2-TP3	S2-TP6
Depth		0.0-0.2	0.5-0.7	0-0.1	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Moisture						
Our Reference		232763-1	232763-2	232763-3	232763-4	232763-5
Your Reference	UNITS	S2-TP14	S2-TP14	S2-TP15	S2-TP15	S2-TP16
Depth		1.2-1.5	0-0.2	0.8-1.0	1.8-2.0	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	5.3	1.8	3.1	9.2	4.6

Moisture						
Our Reference		232763-6	232763-7	232763-8	232763-9	232763-10
Your Reference	UNITS	S2-TP16	S2-TP18	S2-TP19	S2-TP19	S2-TP20
Depth		1.0-1.2	0.3-0.5	0.2	0.4-0.6	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	3.8	9.8	5.3	5.6	7.1

Moisture						
Our Reference		232763-11	232763-12	232763-13	232763-14	232763-15
Your Reference	UNITS	S2-TP20	S2-TP21	S2-TP21	S2-TP22	S2-TP22
Depth		0.3-0.5	0-0.2	0.3-0.5	0-0.2	0.3-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	6.2	6.4	6.7	7.9	4.1

Moisture						
Our Reference		232763-16	232763-17	232763-18	232763-19	232763-20
Your Reference	UNITS	S2-TP23	S2-TP23	S2-TP24	S2-TP24	S2-TP25
Depth		0-0.2	0.3-0.5	0-0.2	0.5-0.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	0.9	7.8	5.3	6.1	4.8

Moisture						
Our Reference		232763-21	232763-22	232763-23	232763-24	232763-25
Your Reference	UNITS	S2-TP25	S2-TP26	S2-TP26	S2-TP27	S2-TP28
Depth		0.3-0.5	0-0.2	0.3	0-0.2	0.02
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	4.6	6.0	5.4	6.3	6.0

Moisture						
Our Reference		232763-26	232763-27	232763-28	232763-29	232763-30
Your Reference	UNITS	S2-TP28	S2-TP8	S2-TP8	S2-TP8	S2-TP9
Depth		0.6-0.8	0-0.2	0.8-1.0	2.5-2.7	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	3.1	1.0	4.1	28	5.2

Moisture						
Our Reference		232763-31	232763-32	232763-33	232763-34	232763-35
Your Reference	UNITS	S2-TP9	S2-TP10	S2-TP10	S2-TP10	S2-TP11
Depth		0.8-1.0	0-0.1	1.5	2.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	3.5	0.5	16	3.2	4.4

Moisture						
Our Reference		232763-36	232763-37	232763-38	232763-39	232763-40
Your Reference	UNITS	S2-TP12	S2-TP12	S2-TP13	S2-TP14	S2-TP1
Depth		0.0-0.2	0.8-1.0	0.5-0.7	0.3-0.5	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	2.5	4.6	3.2	5.4	5.1

Moisture						
Our Reference		232763-41	232763-42	232763-43	232763-44	232763-46
Your Reference	UNITS	BD1 2019 1205	S2-TP2	S2-TP2	S2-TP2	S2-TP3
Depth		.	0-0.1	0.1-0.2	1.4-1.5	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	6.0	3.4	5.7	14	8.9

Moisture						
Our Reference		232763-47	232763-48	232763-51	232763-52	232763-53
Your Reference	UNITS	S2-TP4	S2-TP4	S2-TP5	S2-TP6	S2-TP6
Depth		0-0.2	0.9-1.0	0.4-0.6	0-0.2	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	7.4	6.3	6.6	3.9	4.6

Moisture					
Our Reference		232763-54	232763-55	232763-59	232763-67
Your Reference	UNITS	S2-TP7	S2-TP7	BD2/2019 1210	S2-TP23
Depth		0-0.2	0.8-1.0	.	0.8-1.0
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	11/12/2019	11/12/2019	11/12/2019	11/12/2019
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Moisture	%	4.3	4.7	3.4	8.0

Asbestos ID - soils						
Our Reference		232763-8	232763-14	232763-24	232763-25	232763-47
Your Reference	UNITS	S2-TP19	S2-TP22	S2-TP27	S2-TP28	S2-TP4
Depth		0.2	0-0.2	0-0.2	0.02	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	Approx. 30g	Approx. 60g	Approx. 30g	Approx. 25g	Approx. 30g
Sample Description	-	Beige fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils NEPM						
Our Reference		232763-2	232763-5	232763-10	232763-11	232763-12
Your Reference	UNITS	S2-TP14	S2-TP16	S2-TP20	S2-TP20	S2-TP21
Depth		0-0.2	0-0.2	0-0.2	0.3-0.5	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	887.97	1,004.41	857.19	777.58	915.97
Sample Description	-	Brown sandy soil & rocks	Beige sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Beige sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		232763-15	232763-16	232763-17	232763-18	232763-19
Your Reference	UNITS	S2-TP22	S2-TP23	S2-TP23	S2-TP24	S2-TP24
Depth		0.3-0.5	0-0.2	0.3-0.5	0-0.2	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	1,050.01	686.91	750.77	779.47	859.83
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Beige sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		232763-20	232763-21	232763-22	232763-27	232763-30
Your Reference	UNITS	S2-TP25	S2-TP25	S2-TP26	S2-TP8	S2-TP9
Depth		0-0.2	0.3-0.5	0-0.2	0-0.2	0-0.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	985.31	1,022.02	828.72	929	811.74
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Beige sandy soil & rocks	Brown sandy soil & rocks	Beige sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		232763-32	232763-35	232763-36	232763-38	232763-42
Your Reference	UNITS	S2-TP10	S2-TP11	S2-TP12	S2-TP13	S2-TP2
Depth		0-0.1	0-0.2	0.0-0.2	0.5-0.7	0-0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	938.29	806.95	1,002.96	862.79	1,361.2
Sample Description	-	Beige sandy soil & rocks	Beige sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		232763-45	232763-51	232763-52	232763-54	232763-61
Your Reference	UNITS	S2-TP3	S2-TP5	S2-TP6	S2-TP7	S2-TP15
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	8.2
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	1,017.91	977.63	1,000.07	967.57	951.71
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		232763-62	232763-63	232763-64	232763-65	232763-66
Your Reference	UNITS	S2-TP5	S2-TP6	S2-TP12	S2-TP15	S2-27
Depth		0-0.2	0.4-0.6	0.3-0.5	0-0.1	0.3-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/12/2019	12/12/2019	12/12/2019	12/12/2019	12/12/2019
Sample mass tested	g	983.81	1,137.79	905.04	921.27	772.95
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 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. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	2	<25	<25	0	91	94
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	2	<25	<25	0	91	94
Benzene	mg/kg	0.2	Org-016	<0.2	2	<0.2	<0.2	0	92	95
Toluene	mg/kg	0.5	Org-016	<0.5	2	<0.5	<0.5	0	92	97
Ethylbenzene	mg/kg	1	Org-016	<1	2	<1	<1	0	89	90
m+p-xylene	mg/kg	2	Org-016	<2	2	<2	<2	0	92	94
o-Xylene	mg/kg	1	Org-016	<1	2	<1	<1	0	87	89
naphthalene	mg/kg	1	Org-014	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	97	2	94	102	8	100	105

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	22	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	22	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	22	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	22	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	22	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	22	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	22	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	22	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	22	106	105	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	12/12/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	2	<50	<50	0	95	98
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	2	<100	<100	0	104	103
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	2	<100	<100	0	62	76
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	2	<50	<50	0	95	98
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	2	<100	<100	0	104	103
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	2	<100	<100	0	62	76
Surrogate o-Terphenyl	%		Org-003	74	2	92	88	4	101	81

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	22	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	22	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	22	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	22	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	22	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	22	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	22	69	91	28	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		12/12/2019	11/12/2019
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	126	94
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	120	92
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	2	0.2	0.4	67	124	98
Anthracene	mg/kg	0.1	Org-012/017	<0.1	2	0.1	0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	2	0.8	1.2	40	126	94
Pyrene	mg/kg	0.1	Org-012/017	<0.1	2	0.9	1.3	36	114	96
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	2	0.6	0.9	40	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	2	0.5	0.8	46	124	70
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	2	0.8	1	22	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	2	0.57	0.83	37	88	88
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	2	0.3	0.4	29	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	2	0.3	0.5	50	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	105	2	103	102	1	90	91

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	232763-39
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		11/12/2019	11/12/2019
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	102	98
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	96	103
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	104	112
Anthracene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	22	0.1	0.1	0	92	129
Pyrene	mg/kg	0.1	Org-012/017	[NT]	22	0.1	0.1	0	92	120
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	22	0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	94	126
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	22	0.2	0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	22	0.1	0.1	0	82	110
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	22	0.1	0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	22	95	95	0	93	94

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	232763-59
Date extracted	-			[NT]	26	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			[NT]	26	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	102	108
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	96	106
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	104	124
Anthracene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	92	128
Pyrene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	92	111
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	94	132
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	26	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	26	<0.05	<0.05	0	82	117
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	26	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	26	87	89	2	93	102

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	37	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	37	11/12/2019	11/12/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	37	0.1	0.2	67	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	37	0.3	0.5	50	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	37	0.4	0.6	40	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	37	0.3	0.4	29	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	37	0.3	0.5	50	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	37	0.3	0.5	50	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	37	0.2	0.3	40	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	37	0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	37	91	99	8	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	48	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	48	11/12/2019	11/12/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	48	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	48	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	48	95	98	3	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	55	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	55	11/12/2019	11/12/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	55	<0.1	0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	55	0.6	0.8	29	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	55	0.2	0.2	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	55	1.1	1.7	43	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	55	1.2	1.9	45	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	55	0.6	0.9	40	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	55	0.7	1.1	44	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	55	0.8	1	22	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	55	0.5	0.74	39	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	55	0.2	0.3	40	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	55	0.3	0.4	29	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	55	94	95	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		12/12/2019	11/12/2019
HCB	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	118	116
gamma-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	114	118
Heptachlor	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	102	116
delta-BHC	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	122	126
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	122	124
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	122	128
Dieldrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	124	118
Endrin	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	112	116
pp-DDD	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	112	118
Endosulfan II	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	124	102
Methoxychlor	mg/kg	0.1	Org-005	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	99	2	101	100	1	96	82

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	22	95	97	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		12/12/2019	11/12/2019
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	92	94
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	90	66
Dimethoate	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	88	82
Fenitrothion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	86	86
Malathion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	80	66
Parathion	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	88	88
Ronnel	mg/kg	0.1	Org-008	<0.1	2	<0.1	<0.1	0	92	92
Surrogate TCMX	%		Org-008	99	2	101	100	1	96	82

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	22	95	97	2	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date extracted	-			11/12/2019	2	11/12/2019	11/12/2019		11/12/2019	11/12/2019
Date analysed	-			11/12/2019	2	11/12/2019	11/12/2019		12/12/2019	11/12/2019
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	71	81
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	99	2	101	100	1	96	82

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	11/12/2019	11/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	[NT]	22	95	97	2	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date prepared	-			12/12/2019	2	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Date analysed	-			12/12/2019	2	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	104	104
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	98	91
Chromium	mg/kg	1	Metals-020	<1	2	3	3	0	105	99
Copper	mg/kg	1	Metals-020	<1	2	8	8	0	101	101
Lead	mg/kg	1	Metals-020	<1	2	83	80	4	103	92
Mercury	mg/kg	0.1	Metals-021	<0.1	2	0.1	0.1	0	107	105
Nickel	mg/kg	1	Metals-020	<1	2	2	1	67	98	94
Zinc	mg/kg	1	Metals-020	<1	2	86	73	16	101	96

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	232763-39
Date prepared	-			[NT]	22	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Arsenic	mg/kg	4	Metals-020	[NT]	22	<4	<4	0	109	112
Cadmium	mg/kg	0.4	Metals-020	[NT]	22	<0.4	<0.4	0	104	101
Chromium	mg/kg	1	Metals-020	[NT]	22	6	6	0	111	104
Copper	mg/kg	1	Metals-020	[NT]	22	4	3	29	105	113
Lead	mg/kg	1	Metals-020	[NT]	22	8	8	0	116	108
Mercury	mg/kg	0.1	Metals-021	[NT]	22	<0.1	<0.1	0	97	110
Nickel	mg/kg	1	Metals-020	[NT]	22	2	3	40	103	103
Zinc	mg/kg	1	Metals-020	[NT]	22	22	20	10	108	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	232763-59
Date prepared	-			[NT]	26	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Date analysed	-			[NT]	26	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Arsenic	mg/kg	4	Metals-020	[NT]	26	<4	<4	0	115	115
Cadmium	mg/kg	0.4	Metals-020	[NT]	26	<0.4	<0.4	0	107	108
Chromium	mg/kg	1	Metals-020	[NT]	26	2	2	0	116	110
Copper	mg/kg	1	Metals-020	[NT]	26	<1	<1	0	109	111
Lead	mg/kg	1	Metals-020	[NT]	26	2	2	0	117	##
Mercury	mg/kg	0.1	Metals-021	[NT]	26	<0.1	<0.1	0	103	88
Nickel	mg/kg	1	Metals-020	[NT]	26	<1	1	0	106	111
Zinc	mg/kg	1	Metals-020	[NT]	26	6	7	15	113	79

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	37	12/12/2019	12/12/2019		[NT]	[NT]
Date analysed	-			[NT]	37	12/12/2019	12/12/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	37	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	37	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	37	3	3	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	37	1	2	67	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	37	10	16	46	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	37	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	37	1	1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	37	17	31	58	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	48	12/12/2019	12/12/2019		[NT]	[NT]
Date analysed	-			[NT]	48	12/12/2019	12/12/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	48	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	48	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	48	3	4	29	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	48	2	2	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	48	14	13	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	48	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	48	1	1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	48	24	24	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	55	12/12/2019	12/12/2019		[NT]	[NT]
Date analysed	-			[NT]	55	12/12/2019	12/12/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	55	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	55	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	55	3	3	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	55	5	6	18	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	55	37	45	20	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	55	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	55	1	1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	55	53	77	37	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	232763-8
Date prepared	-			12/12/2019	2	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Date analysed	-			12/12/2019	2	12/12/2019	12/12/2019		12/12/2019	12/12/2019
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	2	<5	<5	0	96	94

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
Date analysed	-			[NT]	22	12/12/2019	12/12/2019		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	22	<5	<5	0	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Asbestos: Excessive sample volume was provided for asbestos analysis.
A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Sample 232763-14 was sub-sampled from a bag provided by the client.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 232763-8,25,24,47 were sub-sampled from jars provided by the client.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Acid Extractable Metals in Soil:
-The laboratory RPD acceptance criteria has been exceeded for 232763-37 for Pb and Zn . Therefore a triplicate result has been issued as laboratory sample number 232763-70.
- # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- ## Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Douglas Partners
Geotechnics / Environment / Groundwater

Metal inc iron + alyn coliforms
fluviae - oil + greas + fecal ~~chlo~~

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.15	**Suburb:**	Randwick	**To:**	EnviroLab
Project Name:	POWH	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	Paul Gorman	**Sampler:**	AD	**Attn:**	Aileen Hie
Emails:	paul.gorman@douglaspartners.com.au; amelia.dani@douglaspartners.com.au				
Date Required:	standard turn around 2DAY			**Email:**	Ahie@envirolab.com.au
Prior Storage:	[redacted] Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Combo 3	Combo 8	Metals + PAH	Combo 8a	asbestos 40g	AFFA				Notes/preservation
X S2TP14 1.2 1.5	1						X							
XX S2-TP14 0 0.2	2					X				X				
X S2-TP15 0.8 1.0	3						X			X				
X S2-TP15 1.8 2.0	4						X							
XX S2-TP16 0.0 0.2	5						X			X				
X S2-TP16 1.0 1.2	6						X			X				
S2-TP17 0.5 0.7	NR				X					X				
X S2-TP18 0.3 0.5	7				X					X				
X S2-TP19 0.2	8					X			X	X				
X S2-TP19 0.4 0.6	9						X			X				
XX S2-TP20 0 0.2	10					X				X				
X S2-TP20 0.3 0.5	11						X			X				
XX S2-TP21 0 0.2	12					X				X				
X S2-TP21 0.3 0.5	13						X			X				
X S2-TP22 0 0.2	14						X		X	X				
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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

Job No: 232763
Date Received: 10/12/19
Time Received: 9:55
Received by: SB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No: 232763

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: **Relinquished by:** **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: AMELIA **Received by:** S. Bolton SBolton ECS Syd. **Date & Time:** 10/12/19 9:55

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.15	**Suburb:**	Randwick	**To:**	EnviroLab
Project Name:	POWH	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	Paul Gorman	**Sampler:**	AD	**Attn:**	Aileen Hie
Emails:	paul.gorman@douglaspartners.com.au; amelia.dani@douglaspartners.com.a				
Date Required:	standard turn around 2DAY			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 3	Combo 8	Metals + PAH	Combo 8a	asbestos 40g	AFFA				Notes/preservation
SZ-TP22 0.3-0.5	15						X			X				
SZ-TP23 0-0.2	16						X			X				
SZ-TP23 0.3-0.5	17						X			X				
SZ-TP24 0-0.2	18						X			X				
SZ-TP24 0.3-0.5	19					X				X				
							X							
SZ-TP25 0-0.2	20					X				✓				
SZ-TP25 0.3-0.5	21					X				X				
SZ-TP26 0-0.2	22					X				X				
SZ-TP26 0.3-0.5	23						X			(				
SZ-TP27 0-0.2	24					X			X	(				
SZ-TP28 0.0-0.2	25						X		X	(				
SZ-TP28 0.6-0.8	26						X			X				
							X							
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 232763

Total number of samples in container: **Relinquished by:** **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: AMELIA **Received by:** S. Bolton ECS Syd **Date & Time:** 10/12/19 9:55

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.15	**Suburb:**	Randwick	**To:**	EnviroLab
Project Name:	POWH	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	Paul Gorman	**Sampler:**	AD	**Attn:**	Aileen Hie
Emails:	paul.gorman@douglaspartners.com.au; amelia.dani@douglaspartners.com.au				
Date Required:	Standard turnaround 3 DAY			**Email:**	Ahie@envirolab.com.au
Prior Storage:	Esky Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 3	Combo 8	Metals + PAH	Combo 8a	asbestos 40g	AFFA				Notes/preservation
SZ-TP8 0.0-0.2	27	5					X			X				
SZ-TP8 0.8-1.0	28						X							
SZ-TP8 2.5-2.7	29						X							
SZ-TP9 0-0.2	30						X			X				
SZ-TP9 0.8-1.0	31						X			X				
SZ-TP10 0.0-0.1	32					X				X				
SZ-TP10 1.5	33						X							
SZ-TP10 2.2	34						X							
SZ-TP11 0-0.2	35						X			X				
SZ-TP12 0.0-0.2	36					X				X				
SZ-TP12 0.8-1.0	37						X							
SZ-TP13 0.0-0.2	~~38~~	NR				X								
SZ-TP13 0.5-0.7	38					X				X				
SZ-TP14 0.0-0.2	2.					X			X					
SZ-TP14 0.2-0.3	~~40~~	~~39~~					X							
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 232763
Date Received: 10/12/19
Time Received: 9:55
Received by: SB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 232763

Total number of samples in container: | **Relinquished by:** | **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd | **Address:** | **Phone:** | **Fax:**

Signed: AMELIA | **Received by:** ECS Syd. S.Bolton | **Date & Time:** 10/12/19 9:55.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.15	**Suburb:**	Randwick	**To:**	EnviroLab
Project Name:	POWH	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	Paul Gorman	**Sampler:**	AD	**Attn:**	Aileen Hie
Emails:	paul.gorman@douglaspartners.com.au; amelia.dani@douglaspartners.com.au				
Date Required:	standard turnaround 2 DAY			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 3	Combo 8	Metals + PAH	Combo 8a	asbestos 40g	AFFA				Notes/preservation
SZ-TP1 0-0.2	40		S				X			✓				
BD1 20191205	41						X							
SZ-TP2 0-0.1	42					X				X				
SZ-TP2 0.1-0.2	43						X							
SZ-TP2 1.04-1.5	44						X							
SZ-TP3 0-0.2	45									X				
SZ-TP3 0.4-0.5	46					X								
SZ-TP4 0-0.2	47						X		X					
SZ-TP4 0.9-1.0	48						X							
TS+TB	~~50/51~~	49/50					X							
SZ-TP5 0.4-0.6	51						X			X				
SZ-TP6 0-0.2	52						X			X				
SZ-TP6 0.7-1.0	53					X				✓				
SZ TP7 0-0.2	54					✓	X			X				
SZ-TP7 0.8-1.0	55		↓				X							
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 232763

Total number of samples in container: | **Relinquished by:** | **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd | **Address:** | **Phone:** | **Fax:**

Signed: AMELIA | **Received by:** ELS Syd. S.Bolton | **Date & Time:** 10/12/19 9:55

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.15	**Suburb:**	Randwick	**To:**	EnviroLab
Project Name:	POWH	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	Paul Gorman	**Sampler:**	AD	**Attn:**	Aileen Hie
Emails:	paul.gorman@douglaspartners.com.au; amelia.dani@douglaspartners.com.au				
Date Required:	standard turn around 2DAY			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 3	Combo 8	Metals + PAH	Combo 8a	asbestos 40g	AFFA	METALS INC. IRON + ALUMINIUM	FLUORIDE	OIL + GREASE	FECAL CLOSTRIDIUM PERFRING	Notes/preservation
S2-TP7 1.1-1.3	56		S				X			X					
S2-TP7 0.8-1.0	57						X								
S2-TP7		8/10/12					X								
DW-SS4-57	58		W								X	X	X	X	24 TURNAROUND
BD1/2019/120 58	59						X								INTERLAB
BD2/2019/120 59	60						X								PLEASE
BD1/2019/120 60	61						X								
S2-TP5 8.61 8.2	62									X					
S2-TP5 0.62 0.2	63									X					
S2-TP6 0.4 0.6 63	64									X					
S2-TP4 0.3 0.5	NR									X					
S2-TP2 -0.3 0.3	65									X					
S2-TP5 0.5 0.1	66									X					
S2-TP3 0.3	67									X					
S2-TP23 0.8-1.0	68	extra sample													
PQL (S) mg/kg															**ANZECC PQLs req'd for all water analytes** ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 232763

Total number of samples in container:	**Relinquished by:**	**Transported to laboratory by:**	
Send Results to: Douglas Partners Pty Ltd	**Address:**	**Phone:**	**Fax:**
Signed: AMELIA	**Received by:** S. Bolton SB ELS Syd. 10/12/19	**Date & Time:** 10/12/19	9:55

S2-TP24 1.1-1.3 68
S2-TP25 no depth 70 / 69 } extra samples.

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

CERTIFICATE OF ANALYSIS 232763-B

Client Details

Client	Douglas Partners Pty Ltd
Attention	Amelia Dani
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.16, POWH**
Number of Samples	68 Soil, 1 Water
Date samples received	10/12/2019
Date completed instructions received	13/12/2019

Analysis Details

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

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

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

Report Details

Date results requested by	17/12/2019
Date of Issue	17/12/2019

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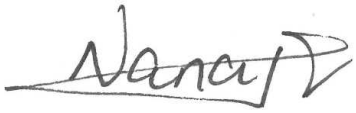
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)					
Our Reference		232763-B-36	232763-B-39	232763-B-51	232763-B-52
Your Reference	UNITS	S2-TP12	S2-TP14	S2-TP5	S2-TP6
Depth		0.0-0.2	0.3-0.5	0.4-0.6	0-0.2
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	16/12/2019	16/12/2019	16/12/2019	16/12/2019
Date analysed	-	16/12/2019	16/12/2019	16/12/2019	16/12/2019
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	106	106	96	94

Metals in TCLP USEPA1311						
Our Reference		232763-B-13	232763-B-17	232763-B-36	232763-B-39	232763-B-51
Your Reference	UNITS	S2-TP21	S2-TP23	S2-TP12	S2-TP14	S2-TP5
Depth		0.3-0.5	0.3-0.5	0.0-0.2	0.3-0.5	0.4-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/12/2019	16/12/2019	16/12/2019	16/12/2019	16/12/2019
Date analysed	-	16/12/2019	16/12/2019	16/12/2019	16/12/2019	16/12/2019
pH of soil for fluid# determ.	pH units	6.7	8.8	9.5	9.4	7.7
pH of soil TCLP (after HCl)	pH units	1.7	1.8	1.8	2.0	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.1	5.1	5.5	5.0
Lead in TCLP	mg/L	0.07	0.2	[NA]	[NA]	[NA]

Metals in TCLP USEPA1311			
Our Reference		232763-B-52	232763-B-59
Your Reference	UNITS	S2-TP6	BD2/2019 1210
Depth		0-0.2	.
Type of sample		Soil	Soil
Date extracted	-	16/12/2019	16/12/2019
Date analysed	-	16/12/2019	16/12/2019
pH of soil for fluid# determ.	pH units	9.4	8.7
pH of soil TCLP (after HCl)	pH units	1.7	1.7
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.0	5.0
Lead in TCLP	mg/L	[NA]	0.1

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012/017	Leachates are extracted with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			16/12/2019	[NT]	[NT]	[NT]	[NT]	16/12/2019	[NT]
Date analysed	-			16/12/2019	[NT]	[NT]	[NT]	[NT]	16/12/2019	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	110	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	91	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	91	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	97	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012/017	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	84	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	82	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	232763-B-17
Date extracted	-			16/12/2019	13	16/12/2019	16/12/2019		16/12/2019	16/12/2019
Date analysed	-			16/12/2019	13	16/12/2019	16/12/2019		16/12/2019	16/12/2019
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	13	0.07	0.07	0	105	102

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Andrew (Fitzy) Fitzsimons

From: Paul Gorman <Paul.Gorman@douglaspartners.com.au>
Sent: Friday, 13 December 2019 12:15 PM
To: Amelia Dani
Cc: Jeremy Faircloth; Samplereceipt
Subject: RE: Results for Registration 232763 72505.16, POWH

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 232763-B
TAT: 2 days
Due: 17/12/19

2 days

On 13 Dec. 2019 12:11, Amelia Dani <Amelia.Dani@douglaspartners.com.au> wrote:
Paul, what TAT do we want on these?

Jeremy,

Can we please get TCLP for:

B(a)P

- S2-TP5 0.4-0.6 - 51
- S2-TP6 0-0.2 - 52
- S2-TP12 0-0.2 - 36
- S2-TP14 0.3-0.5 - 39

Lead:

- BD2/20191210 - 59
- S2-TP21 0.3-0.5 - 13
- S2-TP23 0.3-0.5 - 17

Regards,

Amelia Dani | Graduate Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | E: Amelia.Dani@douglaspartners.com.au

FINANCIAL REVIEW
CLIENT CHOICE AWARDS 2019
WINNER beaton

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From: Jeremy Faircloth <JFaircloth@envirolab.com.au>
Sent: Thursday, 12 December 2019 5:17 PM
To: Amelia Dani <Amelia.Dani@douglaspartners.com.au>; Paul Gorman <Paul.Gorman@douglaspartners.com.au>
Subject: Results for Registration 232763 72505.16, POWH

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CERTIFICATE OF ANALYSIS 249420

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman, Joel Hall
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.07, RCR Hospital Road, Randwick**
Number of Samples	11 Soil
Date samples received	20/08/2020
Date completed instructions received	20/08/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	27/08/2020
Date of Issue	27/08/2020

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Nancy Zhang, Laboratory Manager

VOCs in soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1	<1	<1
chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1	<1	<1

VOCs in soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
bromoform	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1	<1	<1	<1
isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluorometha	%	99	97	100	99	100
Surrogate aaa-Trifluorotoluene	%	87	93	89	90	87
Surrogate Toluene-d_8	%	98	98	98	98	97
Surrogate 4-Bromofluorobenzene	%	105	105	105	106	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	87	93	89	79	81

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249420-6	249420-7	249420-8	249420-9	249420-10
Your Reference	UNITS	BH604	BH605	BH605	BD1/20200819	Trip Spike
Depth		1.0-1.2	0.4-0.5	0.9-1.1	-	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	99%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	104%
Ethylbenzene	mg/kg	<1	<1	<1	<1	103%
m+p-xylene	mg/kg	<2	<2	<2	<2	105%
o-Xylene	mg/kg	<1	<1	<1	<1	103%
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	[NA]
Surrogate aaa-Trifluorotoluene	%	90	87	93	91	92

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		249420-11
Your Reference	UNITS	Trip Blank
Depth		-
Type of sample		Soil
Date Sampled		19/08/2020
Date extracted	-	21/08/2020
Date analysed	-	24/08/2020
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	82

svTRH (C10-C40) in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	22/08/2020	22/08/2020	22/08/2020	22/08/2020	22/08/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	75	83	84	81	84

svTRH (C10-C40) in Soil					
Our Reference		249420-6	249420-7	249420-8	249420-9
Your Reference	UNITS	BH604	BH605	BH605	BD1/20200819
Depth		1.0-1.2	0.4-0.5	0.9-1.1	-
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	22/08/2020	22/08/2020	22/08/2020	22/08/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	130	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	140	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	240	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	110	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	270	<50	<50	<50
Total +ve TRH (>C10-C40)	mg/kg	350	<50	<50	<50
Surrogate o-Terphenyl	%	90	82	81	82

PAHs in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	0.1	1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Fluoranthene	mg/kg	<0.1	0.2	0.3	0.3	1.0
Pyrene	mg/kg	0.1	0.2	0.3	0.4	1.0
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	0.2	0.4
Chrysene	mg/kg	<0.1	0.1	0.2	0.2	0.5
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.3	0.4	0.6
Benzo(a)pyrene	mg/kg	<0.05	0.09	0.2	0.2	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.1	0.2	0.2
Total +ve PAH's	mg/kg	0.1	0.53	1.5	2.2	5.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6
Surrogate p-Terphenyl-d14	%	107	99	104	107	107

PAHs in Soil					
Our Reference		249420-6	249420-7	249420-8	249420-9
Your Reference	UNITS	BH604	BH605	BH605	BD1/20200819
Depth		1.0-1.2	0.4-0.5	0.9-1.1	-
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.4	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.4	<0.1	0.1	<0.1
Anthracene	mg/kg	0.6	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	4.9	<0.1	0.3	0.1
Pyrene	mg/kg	5.6	<0.1	0.3	0.1
Benzo(a)anthracene	mg/kg	3.2	<0.1	0.1	<0.1
Chrysene	mg/kg	2.8	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	4.6	<0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	3.3	<0.05	0.2	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	1.3	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1.7	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	30	<0.05	1.8	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	4.6	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	4.6	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	4.6	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	107	108	104	109

Organochlorine Pesticides in soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	106	110	112	115

Organophosphorus Pesticides in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	106	110	112	115

PCBs in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date extracted	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	106	110	112	115

Acid Extractable metals in soil						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.9	<0.4
Chromium	mg/kg	27	3	24	5	6
Copper	mg/kg	7	3	15	20	6
Lead	mg/kg	23	16	35	70	39
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	22	2	27	14	6
Zinc	mg/kg	22	21	55	410	62

Acid Extractable metals in soil						
Our Reference		249420-6	249420-7	249420-8	249420-9	249420-12
Your Reference	UNITS	BH604	BH605	BH605	BD1/20200819	BH601 - [TRIPLICATE]
Depth		1.0-1.2	0.4-0.5	0.9-1.1	-	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	43	3	35	32
Copper	mg/kg	26	15	26	50	8
Lead	mg/kg	150	24	56	17	10
Mercury	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	6	35	2	34	27
Zinc	mg/kg	240	53	130	52	22

Misc Soil - Inorg						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Asbestos ID - soils						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Sample mass tested	g	Approx. 25g	Approx. 25g	Approx. 30g	Approx. 25g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils				
Our Reference		249420-6	249420-7	249420-8
Your Reference	UNITS	BH604	BH605	BH605
Depth		1.0-1.2	0.4-0.5	0.9-1.1
Type of sample		Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020
Sample mass tested	g	Approx. 25g	Approx. 30g	Approx. 25g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Moisture						
Our Reference		249420-1	249420-2	249420-3	249420-4	249420-5
Your Reference	UNITS	BH601	BH602	BH603	BH603	BH604
Depth		0.4-0.5	0.4-0.6	0.5-0.7	0.8-1.0	0.5-0.7
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Moisture	%	15	10	9.0	12	6.7

Moisture					
Our Reference		249420-6	249420-7	249420-8	249420-9
Your Reference	UNITS	BH604	BH605	BH605	BD1/20200819
Depth		1.0-1.2	0.4-0.5	0.9-1.1	-
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Moisture	%	11	14	16	12

Miscellaneous Inorg - soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date prepared	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
Date analysed	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
Ammonia as N in soil	mg/kg	<0.5	0.5	<0.5	0.7	<0.5

Explosives in Soil						
Our Reference		249420-1	249420-2	249420-3	249420-6	249420-7
Your Reference	UNITS	BH601	BH602	BH603	BH604	BH605
Depth		0.4-0.5	0.4-0.6	0.5-0.7	1.0-1.2	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date Extracted	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
Date analysed	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
HMX	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
RDX	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
1,3,5-Trinitrobenzene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dinitrobenzene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetryl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,6-Trinitrotoluene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
4-&2-AM-DNT(Isomeric Mixture)	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dinitrotoluene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dinitrotoluene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrotoluene & 4-Nitrotoluene	mg/kg	<5	<5	<5	<5	<5
3-Nitrotoluene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nitroglycerine	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
PETN	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
3,5-Dinitroaniline	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate (Dinitrobenzene)	%	90	92	97	88	94

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-029	Soil samples are extracted with acetonitrile. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. Analysis is undertaken with LC-MSMS.

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			24/08/2020	1	24/08/2020	24/08/2020		24/08/2020	24/08/2020
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	99	70
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	1	<1	<1	0	112	78
2,2-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	104	73
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	101	72
1,1-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	108	77
bromodichloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	107	77
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	106	75
1,2-dibromoethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	102	72
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
styrene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	98	1	99	96	3	100	101
Surrogate aaa-Trifluorotoluene	%		Org-023	101	1	87	91	4	104	92
Surrogate Toluene-d_8	%		Org-023	97	1	98	100	2	102	100
Surrogate 4-Bromofluorobenzene	%		Org-023	104	1	105	110	5	106	107

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	24/08/2020	24/08/2020		[NT]	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
cis-1,2-dichloroethene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
chloroform	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
2,2-dichloropropane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1-dichloropropene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	7	<0.2	<0.2	0	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
bromodichloromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
trans-1,3-dichloropropene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	7	<0.5	<0.5	0	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2-dibromoethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
bromoform	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	7	<2	<2	0	[NT]	[NT]
styrene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	[NT]	7	100	97	3	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	7	87	94	8	[NT]	[NT]
Surrogate Toluene-d_8	%		Org-023	[NT]	7	97	99	2	[NT]	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	[NT]	7	105	106	1	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			24/08/2020	1	24/08/2020	24/08/2020		24/08/2020	24/08/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	117	84
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	117	84
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	104	74
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	116	82
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	123	88
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	122	87
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	127	90
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	101	1	87	91	4	104	92

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	24/08/2020	24/08/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	7	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	7	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	7	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	7	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	7	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	7	87	94	8	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			22/08/2020	1	22/08/2020	22/08/2020		22/08/2020	22/08/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	102	91
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	78	74
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	77	126
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	102	91
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	78	74
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	77	126
Surrogate o-Terphenyl	%		Org-020	86	1	75	83	10	126	83

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	22/08/2020	22/08/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	7	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	7	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	7	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	7	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	7	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	7	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	7	82	84	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	92
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	87
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	98
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.2	67	95	#
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.3	100	91	#
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.3	100	88	#
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.2	67	96	#
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	0.1	67	86	#
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	109	1	107	102	5	107	101

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	0.2	67	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	0.2	67	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	7	<0.2	0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	7	<0.05	0.1	67	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	7	108	104	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	83
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	81
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	77
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	88
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	84
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	84
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	81
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	86
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	79
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	76	78
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	107	1	111	108	3	109	104

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	7	115	108	6	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	80
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	82
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	115	101
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	114
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	91
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	100
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	109	103
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	107	1	111	108	3	109	104

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	7	115	108	6	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date extracted	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	98	88
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	107	1	111	108	3	109	104

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	7	115	108	6	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date prepared	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	21/08/2020
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	96	105
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	98	99
Chromium	mg/kg	1	Metals-020	<1	1	27	25	8	96	106
Copper	mg/kg	1	Metals-020	<1	1	7	8	13	98	108
Lead	mg/kg	1	Metals-020	<1	1	23	11	71	97	95
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	98	85
Nickel	mg/kg	1	Metals-020	<1	1	22	27	20	98	107
Zinc	mg/kg	1	Metals-020	<1	1	22	21	5	93	94

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Date analysed	-			[NT]	7	21/08/2020	21/08/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	7	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	7	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	7	43	35	21	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	7	15	13	14	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	7	24	26	8	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	7	35	32	9	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	7	53	50	6	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	[NT]
Date analysed	-			21/08/2020	1	21/08/2020	21/08/2020		21/08/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	99	[NT]

QUALITY CONTROL: Miscellaneous Inorg - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			26/08/2020	[NT]	[NT]	[NT]	[NT]	26/08/2020	[NT]
Date analysed	-			26/08/2020	[NT]	[NT]	[NT]	[NT]	26/08/2020	[NT]
Ammonia as N in soil	mg/kg	0.5	Inorg-057	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Explosives in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	249420-2
Date Extracted	-			26/08/2020	1	26/08/2020	26/08/2020		26/08/2020	26/08/2020
Date analysed	-			26/08/2020	1	26/08/2020	26/08/2020		26/08/2020	26/08/2020
HMX	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	114	110
RDX	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	97
1,3,5-Trinitrobenzene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	110
1,3-Dinitrobenzene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	129	125
Tetryl	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	107	105
2,4,6-Trinitrotoluene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	106	106
4-&2-AM-DNT(Isomeric Mixture)	mg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	87	82
2,4-Dinitrotoluene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	100
2,6-Dinitrotoluene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	94	89
Nitrobenzene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	95
2-Nitrotoluene & 4-Nitrotoluene	mg/kg	5	Org-029	<5	1	<5	<5	0	99	96
3-Nitrotoluene	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	91	93
Nitroglycerine	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	115	110
PETN	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	97	96
3,5-Dinitroaniline	mg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	89	88
Surrogate (Dinitrobenzene)	%		Org-029	92	1	90	89	1	100	95

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

PAHs in Soil - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 249420-2 has caused interference.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 249420-1 for Pb. Therefore a triplicate result has been issued as laboratory sample number 249420-12.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.

Douglas Partners
Geotechnics | Environment | Groundwater

F.14 - CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.19	**Suburb:**	Randwick	**To:**	Envirolab Services Pty Ltd
Project Name:	RCR Hospital Road	**Order Number**			12 Ashley Street, Chatswood, NSW 2067
Project Manager:	Paul Gorman	**Sampler:**	JJH	**Attn:**	Aileen Hie
Emails:	joel.james-hall; paul.gorman@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☑ Esky ☑ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Depth Range	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8a	Combo 3a	VOC	Ammonia + Explosives	BTEX	Combo 3				Notes/preservation
BH601	0.4-0.5	1	19.8.20	S	G	x		x	x						
BH602	0.4-0.6	2	19.8.20	S	G	x		x	x						
BH603	0.5-0.7	3	19.8.20	S	G	x		x	x						
BH603	0.8-1.0	4	19.8.20	S	G		x								
BH604	0.5-0.7	5	19.8.20	S	G		x								
BH604	1.0-1.2	6	19.8.20	S	G	x		x	x						
BH605	0.4-0.5	7	19.8.20	S	G	x		x	x						
BH605	0.9-1.1	8	19.8.20	S	G		x								
BD1/20200819	-	9	19.8.20	S	G						x				
Trip Spike	-	10	19.8.20	S	G					x					
Trip Blank	-	11	19.8.20	S	G					x					
PQL (S) mg/k														**ANZECC PQLs req'd for all water analytes** ☐	

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

Job No: 249420
Date Received: 20/8/20
Time Received: 1256
Received By: Helen W
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 249420

Total number of samples in container: **Relinquished by:** JJH **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: **Received by:** **Date & Time:** 20/8/20 1256

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman, Joel Hall

Sample Login Details

Your reference	72505.07, RCR Hospital Road, Randwick
Envirolab Reference	249420
Date Sample Received	20/08/2020
Date Instructions Received	20/08/2020
Date Results Expected to be Reported	27/08/2020

Sample Condition

Samples received in appropriate condition for analysis	
No. of Samples Provided	11 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.4
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	Asbestos ID - soils	Ammonia as N in soil	Explosives in Soil
BH601-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH602-0.4-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH603-0.5-0.7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH603-0.8-1.0		✓	✓	✓				✓		✓		
BH604-0.5-0.7		✓	✓	✓				✓		✓		
BH604-1.0-1.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH605-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH605-0.9-1.1		✓	✓	✓				✓		✓		
BD1/20200819		✓	✓	✓				✓				
Trip Spike		✓										
Trip Blank		✓										

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

Additional Info

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

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 249420-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.07, RCR Hospital Road, Randwick**
Number of Samples	11 Soil
Date samples received	20/08/2020
Date completed instructions received	03/08/2020

Analysis Details

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

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

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

Report Details

Date results requested by	03/09/2020
Date of Issue	02/09/2020

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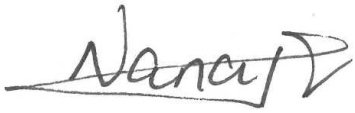
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		249420-A-6
Your Reference	UNITS	BH604
Depth		1.0-1.2
Type of sample		Soil
Date Sampled		19/08/2020
Date extracted	-	01/09/2020
Date analysed	-	01/09/2020
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	84

Metals in TCLP USEPA1311		
Our Reference		249420-A-6
Your Reference	UNITS	BH604
Depth		1.0-1.2
Type of sample		Soil
Date Sampled		19/08/2020
Date extracted	-	31/08/2020
Date analysed	-	31/08/2020
pH of soil for fluid# determ.	pH units	8.2
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	4.9
Lead in TCLP	mg/L	0.3

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			01/09/2020	[NT]	[NT]	[NT]	[NT]	01/09/2020	[NT]
Date analysed	-			01/09/2020	[NT]	[NT]	[NT]	[NT]	01/09/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	83	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	97	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2020	[NT]	[NT]	[NT]	[NT]	31/08/2020	[NT]
Date analysed	-			31/08/2020	[NT]	[NT]	[NT]	[NT]	31/08/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	97	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Ming To

From: Nancy Zhang
Sent: Thursday, 27 August 2020 1:18 PM
To: Ming To
Cc: Samplereceipt Distribution Sydney
Subject: FW: Results for Registration 249420 72505.07, RCR Hospital Road, Randwick

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 249420-A
TAT: Standard.
Due: 03/09/2020 MT.

A job, please.

Kind Regards,

Nancy Zhang | Laboratory Manager, Sydney | Envirolab Services Pty Ltd

***Celebrating 15 years of* Great Science. Great Service.**
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T 612 9910 6200 **F** 612 9910 6201
E nzhang@envirolab.com.au | **W** www.envirolab.com.au

View reduced sampling bottle provision for PFAS in water | COVID-19 Update

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Envirolab Group Terms and Conditions. The Terms and Conditions are accessible by clicking this link

From: Paul Gorman <Paul.Gorman@douglaspartners.com.au>
Sent: Thursday, 27 August 2020 1:17 PM
To: Nancy Zhang <NZhang@envirolab.com.au>; Joel James-Hall <joel.james-hall@douglaspartners.com.au>
Subject: RE: Results for Registration 249420 72505.07, RCR Hospital Road, Randwick

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Thanks Nancy,

Can you please schedule TCLP testing (standard turnaround) on the following:

(6) BH604/1.0-1.2 lead, PAH

Thanks

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 250248

Client Details

Client	Douglas Partners Pty Ltd
Attention	Joel James-Hall
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, RCR HRL Randwick**
Number of Samples	7 SOIL
Date samples received	02/09/2020
Date completed instructions received	02/09/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	09/09/2020
Date of Issue	09/09/2020

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

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

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in soil				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	04/09/2020	04/09/2020	04/09/2020
Dichlorodifluoromethane	mg/kg	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1
chloroform	mg/kg	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1

VOCs in soil				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Ethylbenzene	mg/kg	<1	<1	<1
bromoform	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
styrene	mg/kg	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1	<1
isopropylbenzene	mg/kg	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1
Surrogate Dibromofluorometha	%	94	96	109
Surrogate aaa-Trifluorotoluene	%	110	108	111
Surrogate Toluene-d_8	%	100	102	101
Surrogate 4-Bromofluorobenzene	%	122	114	128

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	04/09/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	110	106	108	92	111

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020
Date analysed	-	04/09/2020	04/09/2020
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<3	<3
Surrogate aaa-Trifluorotoluene	%	97	98

svTRH (C10-C40) in Soil						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	04/09/2020	04/09/2020	04/09/2020	04/09/2020	04/09/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	75	82	70	74	88

svTRH (C10-C40) in Soil			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020
Date analysed	-	04/09/2020	04/09/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	75	72

PAHs in Soil						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.2	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	0.7	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	7.3	0.1	<0.1	<0.1	0.6
Pyrene	mg/kg	6.6	0.1	<0.1	<0.1	0.7
Benzo(a)anthracene	mg/kg	4.8	<0.1	<0.1	<0.1	0.4
Chrysene	mg/kg	3.3	<0.1	<0.1	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	5.4	<0.2	<0.2	<0.2	1
Benzo(a)pyrene	mg/kg	3.4	0.06	<0.05	<0.05	0.68
Indeno(1,2,3-c,d)pyrene	mg/kg	1.6	<0.1	<0.1	<0.1	0.4
Dibenzo(a,h)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	0.1
Benzo(g,h,i)perylene	mg/kg	1.9	<0.1	<0.1	<0.1	0.6
Total +ve PAH's	mg/kg	38	0.3	<0.05	<0.05	5.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	4.9	<0.5	<0.5	<0.5	1
Benzo(a)pyrene TEQ calc(half)	mg/kg	4.9	<0.5	<0.5	<0.5	1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	4.9	<0.5	<0.5	<0.5	1
Surrogate p-Terphenyl-d14	%	124	120	119	124	127

PAHs in Soil			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.7	<0.1
Pyrene	mg/kg	0.7	<0.1
Benzo(a)anthracene	mg/kg	0.4	<0.1
Chrysene	mg/kg	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.8	<0.2
Benzo(a)pyrene	mg/kg	0.5	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	<0.1
Total +ve PAH's	mg/kg	4.5	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.6	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.7	<0.5
Surrogate p-Terphenyl-d14	%	119	127

Organochlorine Pesticides in soil				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	0.2	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	1.1	<0.1
alpha-chlordane	mg/kg	<0.1	0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	104

Organophosphorus Pesticides in Soil				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	104

PCBs in Soil				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	104

Acid Extractable metals in soil						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	1	4	1	2
Copper	mg/kg	6	2	8	1	4
Lead	mg/kg	15	8	73	7	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	<1	3	<1	<1
Zinc	mg/kg	12	7	24	4	5

Acid Extractable metals in soil			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date prepared	-	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	3	5
Copper	mg/kg	7	1
Lead	mg/kg	29	5
Mercury	mg/kg	0.2	<0.1
Nickel	mg/kg	<1	1
Zinc	mg/kg	6	3

Misc Soil - Inorg				
Our Reference		250248-1	250248-3	250248-5
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	0.5	0.5
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	03/09/2020	03/09/2020	03/09/2020
Date analysed	-	03/09/2020	03/09/2020	03/09/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	3/09/2020	3/09/2020	3/09/2020	3/09/2020	3/09/2020
Date analysed	-	4/09/2020	4/09/2020	4/09/2020	4/09/2020	4/09/2020
Moisture	%	2.8	0.8	8.9	2.5	2.3

Moisture			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date prepared	-	3/09/2020	3/09/2020
Date analysed	-	4/09/2020	4/09/2020
Moisture	%	6.0	9.1

Asbestos ID - soils						
Our Reference		250248-1	250248-2	250248-3	250248-4	250248-5
Your Reference	UNITS	BH606	BH606	BH607	BH607	BH608
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		28/08/2020	28/08/2020	31/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/09/2020	03/09/2020	03/09/2020	03/09/2020	03/09/2020
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 30g
Sample Description	-	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils			
Our Reference		250248-6	250248-7
Your Reference	UNITS	BH608	BH608
Depth		1	2
Date Sampled		27/08/2020	27/08/2020
Type of sample		SOIL	SOIL
Date analysed	-	03/09/2020	03/09/2020
Sample mass tested	g	Approx. 30g	Approx. 25g
Sample Description	-	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference		250248-1	250248-4	250248-6
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	1.0	1
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	04/09/2020	04/09/2020	04/09/2020
Date analysed	-	04/09/2020	04/09/2020	04/09/2020
pH 1:5 soil:water	pH Units	6.2	5.8	5.3

CEC				
Our Reference		250248-1	250248-4	250248-6
Your Reference	UNITS	BH606	BH607	BH608
Depth		0.5	1.0	1
Date Sampled		28/08/2020	31/08/2020	27/08/2020
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020	07/09/2020
Exchangeable Ca	meq/100g	2.1	1.0	0.6
Exchangeable K	meq/100g	0.1	<0.1	<0.1
Exchangeable Mg	meq/100g	1.3	<0.1	0.14
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	3.5	1.1	<1

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

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

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			04/09/2020	[NT]	[NT]	[NT]	[NT]	04/09/2020	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	75	[NT]
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
2,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	70	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
1,1-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
bromodichloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
1,2-dibromoethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
styrene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	105	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate Toluene-d_8	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	117	[NT]	[NT]	[NT]	[NT]	117	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			04/09/2020	[NT]	[NT]	[NT]	[NT]	04/09/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	118	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	119	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	105	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	04/09/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	72	[NT]	[NT]	[NT]	[NT]	119	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	95	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	122	[NT]	[NT]	[NT]	[NT]	123	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	104	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	104	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	104	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	105	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/09/2020	[NT]	[NT]	[NT]	[NT]	04/09/2020	[NT]
Date analysed	-			04/09/2020	[NT]	[NT]	[NT]	[NT]	04/09/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/09/2020	4	07/09/2020	07/09/2020		07/09/2020	[NT]
Date analysed	-			07/09/2020	4	07/09/2020	07/09/2020		07/09/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	4	1.0	1.1	10	111	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	4	<0.1	<0.1	0	115	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	4	<0.1	<0.1	0	105	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	4	<0.1	<0.1	0	104	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples were sub-sampled from jars provided by the client.

Tests/Analytes PH for 250248-6 have exceeded the recommended technical holding times, Envirolab Group form 347 "Recommended Preservation and Holding Times" can be provided on request (available on the Envirolab website)

Douglas Partners
Geotechnics / Environment / Groundwater

F.14 - CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.19	**Suburb:**	Randwick	**To:**	Envirolab Services Pty Ltd
Project Name:	RCR HRL	**Order Number**			12 Ashley Street, Chatswood, NSW 2067
Project Manager:	Paul Gorman	**Sampler:**	JJH	**Attn:**	Aileen Hie
Emails:	joel.james-hall;paul.gorman@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au

Prior Storage: ☐ Esky ☐ Fridge ☐ Shelved Do samples contain 'potential' HBM? No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Depth Range	Lab ID	Date Sampled	Sample Type S - soil W - water	r Type G - glass P - plastic	Analytes Combo 8a	Combo 3a	VOC	pH + CEC						Notes/preservation
BH606	0.5	1	28.8.20	S	G	x		x	x						
BH606	1.0	2	28.8.20	S	G		x								
BH607	0.5	3	31.8.20	S	G	x		x							
BH607	1.0	4	31.8.20	S	G		x		x						
BH608	0.5	5	27.8.20	S	G	x		x							
BH608	1	6	27.8.20	S	G		x		x						
BH608	2	7	27.8.20	S	G		x								
PQL (S) mg/l															**ANZECC PQLs req'd for all water analytes** ☐

ENVIROLAB
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 250248
Date Received: 2/9/20
Time Received: 829
Received By: CMs
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here

Lab Report/Reference No:

Total number of samples in container: **Relinquished by:** **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address** **Phone:** **Fax:**

Signed: **Received by:** FUS SUD C. McKenna **Date & Time:** 2/9/20 829

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Joel James-Hall

Sample Login Details

Your reference	72505.19, RCR HRL Randwick
Envirolab Reference	250248
Date Sample Received	02/09/2020
Date Instructions Received	02/09/2020
Date Results Expected to be Reported	09/09/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	7 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.6
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	Asbestos ID - soils	Misc Inorg - Soil	CEC
BH606-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH606-1.0		✓	✓	✓				✓		✓		
BH607-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH607-1.0		✓	✓	✓				✓		✓	✓	✓
BH608-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH608-1		✓	✓	✓				✓		✓	✓	✓
BH608-2		✓	✓	✓				✓		✓		

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

Additional Info

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

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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 250248-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Joel James-Hall
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, RCR HRL Randwick**
Number of Samples	7 SOIL
Date samples received	02/09/2020
Date completed instructions received	17/09/2020

Analysis Details

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

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

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

Report Details

Date results requested by	24/09/2020
Date of Issue	22/09/2020

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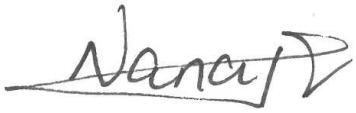
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Dragana Tomas, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		250248-A-1
Your Reference	UNITS	BH606
Depth		0.5
Date Sampled		28/08/2020
Type of sample		SOIL
pH of soil for fluid# determ.	pH units	7.6
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Date extracted	-	18/09/2020
Date analysed	-	18/09/2020
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	115

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/09/2020	[NT]	[NT]	[NT]	[NT]	18/09/2020	[NT]
Date analysed	-			18/09/2020	[NT]	[NT]	[NT]	[NT]	18/09/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	130	[NT]	[NT]	[NT]	[NT]	117	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Ming To

From: Joel James-Hall <joel.james-hall@douglaspartners.com.au>
Sent: Thursday, 17 September 2020 2:57 PM
To: Samplereceipt; Simon Song
Cc: Paul Gorman
Subject: ELS 250248

Ref: 250248-A
TAT: Standard
Due: 24/09/2020 MT.

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Simon,

Could we please schedule TCLP for PAH:

- BH606/0.5 (ELS ref 250248-1)

Standard TAT.

Thanks

Joel James-Hall | Environmental Engineer
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | E: joel.james-hall@douglaspartners.com.au

To find information on our COVID-19 measures, please visit douglaspartners.com.au/news/covid-19

CLIENT CHOIC
2020 WINNER

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CERTIFICATE OF ANALYSIS 250526

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, RCR HRL**
Number of Samples	4 SOIL
Date samples received	04/09/2020
Date completed instructions received	04/09/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	11/09/2020
Date of Issue	11/09/2020

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

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

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Lucy Zhu, Asbestos Supervisor
Manju Dewendrage, Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in soil			
Our Reference		250526-2	250526-4
Your Reference	UNITS	TP601	TP603
Depth		1.0-1.2	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020
Date analysed	-	08/09/2020	08/09/2020
Dichlorodifluoromethane	mg/kg	<1	<1
Chloromethane	mg/kg	<1	<1
Vinyl Chloride	mg/kg	<1	<1
Bromomethane	mg/kg	<1	<1
Chloroethane	mg/kg	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1
1,1-dichloroethane	mg/kg	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1
bromochloromethane	mg/kg	<1	<1
chloroform	mg/kg	<1	<1
2,2-dichloropropane	mg/kg	<1	<1
1,2-dichloroethane	mg/kg	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1
1,1-dichloropropene	mg/kg	<1	<1
Cyclohexane	mg/kg	<1	<1
carbon tetrachloride	mg/kg	<1	<1
Benzene	mg/kg	<0.2	<0.2
dibromomethane	mg/kg	<1	<1
1,2-dichloropropane	mg/kg	<1	<1
trichloroethene	mg/kg	<1	<1
bromodichloromethane	mg/kg	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1
Toluene	mg/kg	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1
dibromochloromethane	mg/kg	<1	<1
1,2-dibromoethane	mg/kg	<1	<1
tetrachloroethene	mg/kg	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1
chlorobenzene	mg/kg	<1	<1

VOCs in soil			
Our Reference		250526-2	250526-4
Your Reference	UNITS	TP601	TP603
Depth		1.0-1.2	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Ethylbenzene	mg/kg	<1	<1
bromoform	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
styrene	mg/kg	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1
o-Xylene	mg/kg	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1
isopropylbenzene	mg/kg	<1	<1
bromobenzene	mg/kg	<1	<1
n-propyl benzene	mg/kg	<1	<1
2-chlorotoluene	mg/kg	<1	<1
4-chlorotoluene	mg/kg	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1
tert-butyl benzene	mg/kg	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1
sec-butyl benzene	mg/kg	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1
4-isopropyl toluene	mg/kg	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1
n-butyl benzene	mg/kg	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1
hexachlorobutadiene	mg/kg	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1
Surrogate Dibromofluorometha	%	99	98
Surrogate aaa-Trifluorotoluene	%	120	126
Surrogate Toluene-d_8	%	99	97
Surrogate 4-Bromofluorobenzene	%	100	102

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	08/09/2020	08/09/2020	08/09/2020	08/09/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	121	120	121	126

svTRH (C10-C40) in Soil					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	08/09/2020	08/09/2020	08/09/2020	08/09/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	91	90	87

PAHs in Soil					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.5	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	<0.1	0.3	1.3	<0.1
Pyrene	mg/kg	<0.1	0.3	1.4	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.9	<0.1
Chrysene	mg/kg	<0.1	0.2	0.8	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	1	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	0.96	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.5	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.6	0.1
Total +ve PAH's	mg/kg	<0.05	1.9	9.0	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.4	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.4	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.4	<0.5
Surrogate p-Terphenyl-d14	%	101	93	96	97

Organochlorine Pesticides in soil			
Our Reference		250526-1	250526-4
Your Reference	UNITS	TP601	TP603
Depth		0.1-0.3	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	104	99

Organophosphorus Pesticides in Soil			
Our Reference		250526-1	250526-4
Your Reference	UNITS	TP601	TP603
Depth		0.1-0.3	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	104	99

PCBs in Soil			
Our Reference		250526-1	250526-4
Your Reference	UNITS	TP601	TP603
Depth		0.1-0.3	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Date extracted	-	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	104	99

Misc Soil - Inorg			
Our Reference		250526-1	250526-4
Your Reference	UNITS	TP601	TP603
Depth		0.1-0.3	0.3-0.5
Date Sampled		02/09/2020	02/09/2020
Type of sample		SOIL	SOIL
Date prepared	-	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5

Acid Extractable metals in soil					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Arsenic	mg/kg	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	4	3	14
Copper	mg/kg	67	12	13	12
Lead	mg/kg	10	79	96	3
Mercury	mg/kg	<0.1	0.8	0.1	<0.1
Nickel	mg/kg	3	1	3	19
Zinc	mg/kg	41	140	130	13

Moisture					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Date analysed	-	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Moisture	%	28	11	12	8.2

Asbestos ID - soils					
Our Reference		250526-1	250526-2	250526-3	250526-4
Your Reference	UNITS	TP601	TP601	TP602	TP603
Depth		0.1-0.3	1.0-1.2	0.7-0.9	0.3-0.5
Date Sampled		02/09/2020	02/09/2020	02/09/2020	02/09/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date analysed	-	10/09/2020	10/09/2020	10/09/2020	10/09/2020
Sample mass tested	g	Approx. 25g	Approx. 30g	28.26g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	YES	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

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

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			08/09/2020	[NT]	[NT]	[NT]	[NT]	08/09/2020	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	127	[NT]
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	122	[NT]
2,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	124	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
1,1-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
bromodichloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	128	[NT]
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
1,2-dibromoethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
styrene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	121	[NT]	[NT]	[NT]	[NT]	120	[NT]
Surrogate Toluene-d_8	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			08/09/2020	[NT]	[NT]	[NT]	[NT]	08/09/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	125	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	125	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	128	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	127	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	125	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	128	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	121	[NT]	[NT]	[NT]	[NT]	120	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			08/09/2020	[NT]	[NT]	[NT]	[NT]	08/09/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	73	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	73	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
Surrogate o-Terphenyl	%		Org-020	96	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	88	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	105	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Date analysed	-			07/09/2020	[NT]	[NT]	[NT]	[NT]	07/09/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	98	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	91	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples were sub-sampled from jars provided by the client.

Sample 250526-3; Loose fibre bundles of Amosite asbestos identified within the sample, however it is estimated less than the reporting limit for the method (i.e. < 0.1g/kg).

Douglas Partners
Geotechnics | Environment | Groundwater

F.14 - CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.19	**Suburb:**	Randwick	**To:**	Envirolab Services Pty Ltd
Project Name:	RCR HRL	**Order Number**			12 Ashley Street, Chatswood, NSW 2067
Project Manager:	Paul Gorman	**Sampler:**	JJH	**Attn:**	Aileen Hie
Emails:	joel.james-hall;paul.gormani@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☑ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Depth Range	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8a	Combo 3a	VOC	Combo 3						Notes/preservation
TP601	0.1-0.3	1	02/09/20			x									
TP601	1.0-1.2	2	02/09/20				x	x							
TP602	0.7-0.9	3	02/09/20				x								
TP603	0.3-0.5	4	03/09/20			x		x							
BD1/20200902		X	03/09/20						x						Inter-lab duplicate
PQL (S) mg/k														**ANZECC PQLs req'd for all water analytes** ☐	

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: **Relinquished by:** JJH **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: **Received by:** ELS Syd K-Gor **Date & Time:** 04/09/2020 1500

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

Job No: 250526
Date Received: 04-09-2020
Time Received:
Received By: KG. 1500
Temp: Cool/Ambient
Cooling: Ice/Icepack 6-8°C
Security: Intact/Broken/None

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	72505.19, RCR HRL
Envirolab Reference	250526
Date Sample Received	04/09/2020
Date Instructions Received	04/09/2020
Date Results Expected to be Reported	11/09/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	4 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Misc Soil - Inorg	Acid Extractable metalsin soil	Asbestos ID - soils
TP601-0.1-0.3		✓	✓	✓	✓	✓	✓	✓	✓	✓
TP601-1.0-1.2	✓	✓	✓	✓					✓	✓
TP602-0.7-0.9		✓	✓	✓					✓	✓
TP603-0.3-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Additional Info

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

Envirolab Services Pty Ltd
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 250526-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, RCR HRL**
Number of Samples	4 SOIL
Date samples received	04/09/2020
Date completed instructions received	16/09/2020

Analysis Details

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

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

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

Report Details

Date results requested by	23/09/2020
Date of Issue	22/09/2020

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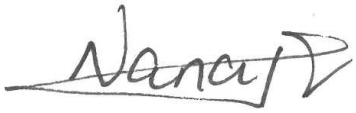
Results Approved By
Dragana Tomas, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		250526-A-3
Your Reference	UNITS	TP602
Depth		0.7-0.9
Date Sampled		02/09/2020
Type of sample		SOIL
pH of soil for fluid# determ.	pH units	7.0
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Date extracted	-	18/09/2020
Date analysed	-	18/09/2020
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	88

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/09/2020	[NT]	[NT]	[NT]	[NT]	18/09/2020	[NT]
Date analysed	-			18/09/2020	[NT]	[NT]	[NT]	[NT]	18/09/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	76	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	79	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	79	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	79	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	110	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Jessica Hie

From: Nick Sarlamis
Sent: Wednesday, 16 September 2020 5:48 PM
To: Paul Gorman; Joel James-Hall
Cc: Jessica Hie
Subject: FW: Results for Registration 250526 72505.19, RCR HRL

No worries Paul

250526-A
Due: 23/9/20.
Std TAT

From: Paul Gorman <Paul.Gorman@douglaspartners.com.au>
Sent: Wednesday, 16 September 2020 5:11 PM
To: Nick Sarlamis <NSarlamis@envirolab.com.au>; Joel James-Hall <joel.james-hall@douglaspartners.com.au>
Subject: Re: Results for Registration 250526 72505.19, RCR HRL

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Nick,

Can you please schedule the following sample for TCLP on a standard turnaround.

(3)

BH602/0.7-0.9 PAH

Thanks

Paul

From: Nick Sarlamis <NSarlamis@envirolab.com.au>
Sent: Friday, 11 September 2020 1:39:26 PM
To: Paul Gorman; Joel James-Hall
Subject: Results for Registration 250526 72505.19, RCR HRL

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
ESDAT Extracts
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

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

CERTIFICATE OF ANALYSIS 250805

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, Randwick**
Number of Samples	2 Water, 2 Soil
Date samples received	09/09/2020
Date completed instructions received	09/09/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	16/09/2020
Date of Issue	16/09/2020

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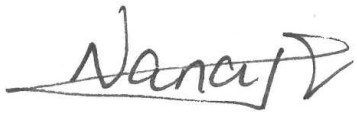
Asbestos Approved By
Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Josh Williams, Senior Chemist
Loren Bardwell, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney
Priya Samarawickrama, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
Dichlorodifluoromethane	mg/kg	<1
Chloromethane	mg/kg	<1
Vinyl Chloride	mg/kg	<1
Bromomethane	mg/kg	<1
Chloroethane	mg/kg	<1
Trichlorofluoromethane	mg/kg	<1
1,1-Dichloroethene	mg/kg	<1
trans-1,2-dichloroethene	mg/kg	<1
1,1-dichloroethane	mg/kg	<1
cis-1,2-dichloroethene	mg/kg	<1
bromochloromethane	mg/kg	<1
chloroform	mg/kg	<1
2,2-dichloropropane	mg/kg	<1
1,2-dichloroethane	mg/kg	<1
1,1,1-trichloroethane	mg/kg	<1
1,1-dichloropropene	mg/kg	<1
Cyclohexane	mg/kg	<1
carbon tetrachloride	mg/kg	<1
Benzene	mg/kg	<0.2
dibromomethane	mg/kg	<1
1,2-dichloropropane	mg/kg	<1
trichloroethene	mg/kg	<1
bromodichloromethane	mg/kg	<1
trans-1,3-dichloropropene	mg/kg	<1
cis-1,3-dichloropropene	mg/kg	<1
1,1,2-trichloroethane	mg/kg	<1
Toluene	mg/kg	<0.5
1,3-dichloropropane	mg/kg	<1
dibromochloromethane	mg/kg	<1
1,2-dibromoethane	mg/kg	<1
tetrachloroethene	mg/kg	<1
1,1,1,2-tetrachloroethane	mg/kg	<1
chlorobenzene	mg/kg	<1

VOCs in soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Ethylbenzene	mg/kg	<1
bromoform	mg/kg	<1
m+p-xylene	mg/kg	<2
styrene	mg/kg	<1
1,1,2,2-tetrachloroethane	mg/kg	<1
o-Xylene	mg/kg	<1
1,2,3-trichloropropane	mg/kg	<1
isopropylbenzene	mg/kg	<1
bromobenzene	mg/kg	<1
n-propyl benzene	mg/kg	<1
2-chlorotoluene	mg/kg	<1
4-chlorotoluene	mg/kg	<1
1,3,5-trimethyl benzene	mg/kg	<1
tert-butyl benzene	mg/kg	<1
1,2,4-trimethyl benzene	mg/kg	<1
1,3-dichlorobenzene	mg/kg	<1
sec-butyl benzene	mg/kg	<1
1,4-dichlorobenzene	mg/kg	<1
4-isopropyl toluene	mg/kg	<1
1,2-dichlorobenzene	mg/kg	<1
n-butyl benzene	mg/kg	<1
1,2-dibromo-3-chloropropane	mg/kg	<1
1,2,4-trichlorobenzene	mg/kg	<1
hexachlorobutadiene	mg/kg	<1
1,2,3-trichlorobenzene	mg/kg	<1
Surrogate Dibromofluorometha	%	106
Surrogate aaa-Trifluorotoluene	%	101
Surrogate Toluene-d_8	%	106
Surrogate 4-Bromofluorobenzene	%	111

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date extracted	-	11/09/2020	11/09/2020
Date analysed	-	11/09/2020	11/09/2020
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<3	<3
Surrogate aaa-Trifluorotoluene	%	98	101

svTRH (C10-C40) in Soil			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date extracted	-	11/09/2020	11/09/2020
Date analysed	-	16/09/2020	16/09/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	110	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	170	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	110	<50
Total +ve TRH (>C10-C40)	mg/kg	170	<50
Surrogate o-Terphenyl	%	92	83

PAHs in Soil			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date extracted	-	11/09/2020	11/09/2020
Date analysed	-	11/09/2020	11/09/2020
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.4	0.4
Anthracene	mg/kg	0.2	0.1
Fluoranthene	mg/kg	1.1	1.2
Pyrene	mg/kg	1.3	1.3
Benzo(a)anthracene	mg/kg	0.6	0.6
Chrysene	mg/kg	0.5	0.6
Benzo(b,j+k)fluoranthene	mg/kg	0.7	1
Benzo(a)pyrene	mg/kg	0.5	0.68
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.3	0.5
Total +ve PAH's	mg/kg	5.8	6.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.7	0.9
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.7	0.9
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.8	1
Surrogate p-Terphenyl-d14	%	101	101

Organochlorine Pesticides in soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	105

Organophosphorus Pesticides in Soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Parathion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1
Surrogate TCMX	%	105

PCBs in Soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	105

Acid Extractable metals in soil			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date prepared	-	11/09/2020	11/09/2020
Date analysed	-	11/09/2020	11/09/2020
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	3	6
Copper	mg/kg	6	6
Lead	mg/kg	5	28
Mercury	mg/kg	<0.1	0.2
Nickel	mg/kg	2	5
Zinc	mg/kg	13	27

Misc Soil - Inorg		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date prepared	-	11/09/2020
Date analysed	-	11/09/2020
Total Phenolics (as Phenol)	mg/kg	<5

Moisture			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date prepared	-	11/09/2020	11/09/2020
Date analysed	-	14/09/2020	14/09/2020
Moisture	%	15	8.9

Asbestos ID - soils			
Our Reference		250805-3	250805-4
Your Reference	UNITS	TP604	TP604
Depth		0.2-0.3	0.4-0.5
Date Sampled		07/04/2020	07/04/2020
Type of sample		Soil	Soil
Date analysed	-	14/09/2020	14/09/2020
Sample mass tested	g	Approx. 35g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected

Miscellaneous Inorg - soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date prepared	-	15/09/2020
Date analysed	-	15/09/2020
Ammonia as N in soil	mg/kg	<0.5

Explosives in Soil		
Our Reference		250805-4
Your Reference	UNITS	TP604
Depth		0.4-0.5
Date Sampled		07/04/2020
Type of sample		Soil
Date Extracted	-	15/09/2020
Date analysed	-	15/09/2020
HMX	mg/kg	<0.1
RDX	mg/kg	<0.1
1,3,5-Trinitrobenzene	mg/kg	<0.1
1,3-Dinitrobenzene	mg/kg	<0.1
Tetryl	mg/kg	<0.1
2,4,6-Trinitrotoluene	mg/kg	<0.1
4-&2-AM-DNT(Isomeric Mixture)	mg/kg	<0.2
2,4-Dinitrotoluene	mg/kg	<0.1
2,6-Dinitrotoluene	mg/kg	<0.1
Nitrobenzene	mg/kg	<0.1
2-Nitrotoluene & 4-Nitrotoluene	mg/kg	<5
3-Nitrotoluene	mg/kg	<0.1
Nitroglycerine	mg/kg	<0.1
PETN	mg/kg	<0.1
3,5-Dinitroaniline	mg/kg	<0.1
Surrogate (Dinitrobenzene)	%	115

VOCs in water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1

VOCs in water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	97
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	95

vTRH(C6-C10)/BTEXN in Water			
Our Reference		250805-1	250805-2
Your Reference	UNITS	BH608	BD1/20200908
Depth		-	-
Date Sampled		08/09/2020	08/09/2020
Type of sample		Water	Water
Date extracted	-	10/09/2020	10/09/2020
Date analysed	-	11/09/2020	11/09/2020
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	97	95
Surrogate toluene-d8	%	100	99
Surrogate 4-BFB	%	95	96

svTRH (C10-C40) in Water			
Our Reference		250805-1	250805-2
Your Reference	UNITS	BH608	BD1/20200908
Depth		-	-
Date Sampled		08/09/2020	08/09/2020
Type of sample		Water	Water
Date extracted	-	11/09/2020	11/09/2020
Date analysed	-	12/09/2020	12/09/2020
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Surrogate o-Terphenyl	%	100	90

PAHs in Water - Low Level			
Our Reference		250805-1	250805-2
Your Reference	UNITS	BH608	BD1/20200908
Depth		-	-
Date Sampled		08/09/2020	08/09/2020
Type of sample		Water	Water
Date extracted	-	11/09/2020	11/09/2020
Date analysed	-	11/09/2020	11/09/2020
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	0.1
Pyrene	µg/L	0.1	0.2
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	0.1
Benzo(b,j+k)fluoranthene	µg/L	0.3	0.4
Benzo(a)pyrene	µg/L	0.2	0.3
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	0.2
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	0.2
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	0.82	1.5
Surrogate p-Terphenyl-d14	%	87	88

Organochlorine Pesticides in Water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	85

OP Pesticides in Water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	85

PCBs in Water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	11/09/2020
Date analysed	-	11/09/2020
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	85

HM in water - dissolved			
Our Reference		250805-1	250805-2
Your Reference	UNITS	BH608	BD1/20200908
Depth		-	-
Date Sampled		08/09/2020	08/09/2020
Type of sample		Water	Water
Date prepared	-	11/09/2020	11/09/2020
Date analysed	-	11/09/2020	11/09/2020
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	9	1
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	6	5
Zinc-Dissolved	µg/L	17	16

Total Phenolics in Water		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	10/09/2020
Total Phenolics (as Phenol)	mg/L	<0.05

Miscellaneous Inorganics		
Our Reference		250805-1
Your Reference	UNITS	BH608
Depth		-
Date Sampled		08/09/2020
Type of sample		Water
Date prepared	-	09/09/2020
Date analysed	-	09/09/2020
pH	pH Units	5.6
Electrical Conductivity	µS/cm	430

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-029	Soil samples are extracted with acetonitrile. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. Analysis is undertaken with LC-MSMS.

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
2,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
1,1-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
bromodichloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
1,2-dibromoethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
styrene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	69	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate Toluene-d_8	%		Org-023	109	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	114	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	94	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	97	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	69	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	15/09/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
Surrogate o-Terphenyl	%		Org-020	77	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	88	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	104	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	127	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	104	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	104	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	92	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	92	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Miscellaneous Inorg - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	15/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	15/09/2020	[NT]
Ammonia as N in soil	mg/kg	0.5	Inorg-057	<0.5	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: Explosives in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date Extracted	-			15/09/2020	4	15/09/2020	15/09/2020		15/09/2020	[NT]
Date analysed	-			16/09/2020	4	15/09/2020	15/09/2020		16/09/2020	[NT]
HMX	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	118	[NT]
RDX	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	115	[NT]
1,3,5-Trinitrobenzene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	127	[NT]
1,3-Dinitrobenzene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	125	[NT]
Tetryl	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	112	[NT]
2,4,6-Trinitrotoluene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	126	[NT]
4-&2-AM-DNT(Isomeric Mixture)	mg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	113	[NT]
2,4-Dinitrotoluene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	89	[NT]
2,6-Dinitrotoluene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	96	[NT]
Nitrobenzene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	110	[NT]
2-Nitrotoluene & 4-Nitrotoluene	mg/kg	5	Org-029	<5	4	<5	<5	0	87	[NT]
3-Nitrotoluene	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	101	[NT]
Nitroglycerine	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	119	[NT]
PETN	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	117	[NT]
3,5-Dinitroaniline	mg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	84	[NT]
Surrogate (Dinitrobenzene)	%		Org-029	115	4	115	109	5	120	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	130	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	110	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	108	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			12/09/2020	[NT]	[NT]	[NT]	[NT]	12/09/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	109	[NT]	[NT]	[NT]	[NT]	73	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	103	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	96	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	113	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	96	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			15/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	96	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	104	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			09/09/2020	[NT]	[NT]	[NT]	[NT]	09/09/2020	[NT]
Date analysed	-			09/09/2020	[NT]	[NT]	[NT]	[NT]	09/09/2020	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples were sub-sampled from jars provided by the client.

Douglas Partners
Geotechnics / Environment / Groundwater

F.14 - CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.19	**Suburb:**	Randwick	**To:**	Envirolab Services Pty Ltd
Project Name:	RCR HRL	**Order Number**			12 Ashley Street, Chatswood, NSW 2067
Project Manager:	Paul Gorman	**Sampler:**	JJH	**Attn:**	Aileen Hie
Emails:	joel.james-hall;paul.gormani@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☑ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Depth Range	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8L	VOC	pH, EC	Combo 3L	Combo 8a	Combo 3a	explosive + ammonia			Notes/preservation
BH608		1	08/09/20	W	G/P	x	x	x							Separate jobs per COC please!
BD1/20200908		2	08/09/20	W	G/P				x						
TP604	0.2-0.3	3	07/04/20	S	G						x				
TP604	0.4-0.5	4	07/04/20	S	G		x			x		x			
PQL (S) mg/k															

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

Job No: 250805
Date Received: 9/9/20
Time Received: 1415
Received By: CM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: | **Relinquished by:** JJH | **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd | **Address:** | **Phone:** | **Fax:**

Signed: | **Received by:** BS JH C.Mullener | **Date & Time:** 9/9/20 1415

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	92505.19, Randwick
Envirolab Reference	250805
Date Sample Received	09/09/2020
Date Instructions Received	09/09/2020
Date Results Expected to be Reported	16/09/2020

Sample Condition

Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	2 Water, 2 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12.4
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Holding time exceedance - sample 3 and 4

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoice accordingly.

Please direct any queries to:

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

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
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Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	Asbestos ID - soils	Ammonia as N in soil	Explosives in Soil	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	Organochlorine Pesticides in Water	OP Pesticides in Water	PCBs in Water	HM in water - dissolved	Total Phenolicsin Water	pH	Electrical Conductivity
BH608													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD1/20200908														✓	✓	✓				✓			
TP604-0.2-0.3		✓	✓	✓				✓		✓													
TP604-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓											

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

Additional Info

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

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

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

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

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CERTIFICATE OF ANALYSIS 250807

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**72505.19, Randwick**
Number of Samples	1 Water
Date samples received	09/09/2020
Date completed instructions received	09/09/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	16/09/2020
Date of Issue	15/09/2020

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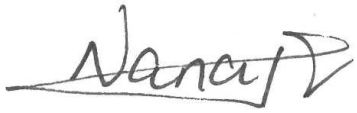
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1

VOCs in water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	98
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	96

vTRH(C6-C10)/BTEXN in Water		
Our Reference	UNITS	250807-1
Your Reference		BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
MTBE	µg/L	<1
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	98
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	96

svTRH (C10-C40) in Water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
TRH C_{10} - C_{14}	µg/L	95
TRH C_{15} - C_{28}	µg/L	210
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	75
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	75
TRH >C_{16} - C_{34}	µg/L	220
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	#

PAHs in Water - Low Level		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
Naphthalene	µg/L	<0.2
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	<0.1
Surrogate p-Terphenyl-d14	%	80

Organochlorine Pesticides in Water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	77

OP Pesticides in Water		
Our Reference	UNITS	250807-1
Your Reference		BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	77

PCBs in Water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	11/09/2020
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	77

HM in water - dissolved		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date prepared	-	10/09/2020
Date analysed	-	10/09/2020
Arsenic-Dissolved	µg/L	1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	<1

Total Phenolics in Water		
Our Reference		250807-1
Your Reference	UNITS	BH12
Date Sampled		08/09/2020
Type of sample		Water
Date extracted	-	10/09/2020
Date analysed	-	10/09/2020
Total Phenolics (as Phenol)	mg/L	<0.05

Miscellaneous Inorganics		
Our Reference	UNITS	250807-1
Your Reference		BH12
Date Sampled		08/09/2020
Type of sample		Water
Date prepared	-	09/09/2020
Date analysed	-	09/09/2020
pH	pH Units	7.8
Electrical Conductivity	µS/cm	540

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	130	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	110	[NT]
MTBE	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	108	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
Surrogate o-Terphenyl	%		Org-020	86	[NT]	[NT]	[NT]	[NT]	64	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	73	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	90	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	78	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	78	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: PCBs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			11/09/2020	[NT]	[NT]	[NT]	[NT]	11/09/2020	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	78	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	103	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Date analysed	-			10/09/2020	[NT]	[NT]	[NT]	[NT]	10/09/2020	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			09/09/2020	[NT]	[NT]	[NT]	[NT]	09/09/2020	[NT]
Date analysed	-			09/09/2020	[NT]	[NT]	[NT]	[NT]	09/09/2020	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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

TRH Water(C10-C40) NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in sample 250807-1 has caused interference.

Douglas Partners
Geotechnics | Environment | Groundwater

F.14 - CHAIN OF CUSTODY DESPATCH SHEET

Project No:	72505.19	**Suburb:**	Randwick	**To:**	Envirolab Services Pty Ltd
Project Name:	RCR HRL	**Order Number**			12 Ashley Street, Chatswood, NSW 2067
Project Manager:	Paul Gorman	**Sampler:**	JJH	**Attn:**	Aileen Hie
Emails:	joel.james-hall;paul.gormani@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☑ Esky ☑ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Depth Range	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8L	VOC	pH, EC	Combo 3L	Combo 8a	Combo 3a	explosive + ammonia			Notes/preservation
BH12		1	08/09/20	W	G/P	x	x	x							
PQL (S) mg/k															**ANZECC PQLs req'd for all water analytes** ☐

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

Job No: 260807
Date Received: 9/9/20
Time Received: 1415
Received By: CM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 260807

Total number of samples in container: **Relinquished by:** JJH **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: **Received by:** C. Mulenue **Date & Time:** 9/9/20 1415

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	72505.19, Randwick
Envirolab Reference	250807
Date Sample Received	09/09/2020
Date Instructions Received	09/09/2020
Date Results Expected to be Reported	16/09/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12.4
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	Organochlorine Pesticides in Water	Organophosphorus Pesticides in Soil	PCBs in Water	HM in water - dissolved	Total Phenolics in Water	pH	Electrical Conductivity
BH12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Additional Info

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