CONSULTING EARTH SCIENTISTS

DETAILED SITE INVESTIGATION

18 RANDWICK CLOSE, CASULA NSW

PREPARED FOR CENTURION GROUP PTY LTD

CES DOCUMENT REFERENCE: CES161003-HC-AF

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DETAILED SITE INVESTIGATION

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EXECUTIVE SUMMARY

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Centurion Group Pty Ltd (the Client) to carry out a Detailed Site Investigation (DSI) at 18 Randwick Close, Casula, New South Wales (NSW) (the site).

It is understood that the Client intends to develop the site for proposed mix use and aged care development. No development plans have been provided to CES. The Site is legally described as Lot 104 in Deposited Plan (DP) 863214. The Site location is presented in **Figure 1**, with a borehole and groundwater monitoring well plan presented as **Figure 2**.

CES has previously undertaken a Geotechnical Investigation (CES Document Referenced CES161003-HC-AB) and a Preliminary Site Investigation (PSI) (CES Document Referenced CES161003-HC-AC dated 1 February 2017) which consisted of a desktop study, site walkover, intrusive soil investigation at 10 locations, and installation of 3 groundwater wells. The site history assessment of as a part of the PSI identified that the site has a history of poultry farming, agriculture and observed fill.

The soil samples submitted for analysis as part of the PSI did not detect contaminant concentrations in excess of the adopted screening criteria. The PSI recommended the completion of a DSI to comply with the Sampling Design Guidelines (NSW EPA, 1995).

To complete the DSI, CES carried out the following scope of works:

- Completion of an intrusive soil investigation and sampling programme comprising:
    - Drilling of 13 boreholes implementing hand auger and push tube drilling methods;
    - Selection of 20 soil samples and submission of selected samples to a NATA accredited laboratory for a broad analytical suite;
    - Collection of three groundwater samples from the existing monitoring wells using low flow sampling techniques. and submission of the samples to a NATA accredited laboratory for a broad analytical suite;

The detailed site investigation of the Site was undertaken on 13 August 2020. The subsurface profile generally comprised fill underlain by natural clays and shales. Field screening did not detect

any evidence of significant contamination, or the laboratory did not detect concentrations in excess of the conservative Tier 1 Screening Criteria, therefore soil and fill underlying the site are considered to be a low risk to human health and the environment.

Metals were detected in excess of the adopted groundwater criteria which were indicative of background levels and not contamination derived from human activities on the Site. As the site is located within an urban area, and there are no registered bores within 500m of the site and drinking water will be provided by reticulated supply and not groundwater abstraction, it is unlikely that groundwater would be extracted at the site. Therefore, these exceedances are considered to be a low risk to the future use of the Site.

Based on the investigation results of the PSI and current DSI, the Site has not been contaminated from the current or historic land use.

The Site is suitable for the proposed mixed use and aged care development.

DETAILED SITE INVESTIGATION

18 RANDWICK CLOSE, CASULA NSW

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
AHD	Australian Height Datum
ALS	Australian Laboratory Services
ANZG	Australian and New Zealand Guidelines
ASS	Acid Sulfate Soil
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
COC	Chain of Custody
CSM	Conceptual Site Model
DAC	Data Acceptance Criteria
DP	Deposited Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EPA	Environment Protection Authority
GIL	Groundwater Investigation Levels
GPR	Ground Penetrating Radar
Ha	Hectare
HSL	Health Screening Level
km	Kilometre
m	Metre
mbgl	metres Below Ground Level
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
NSW	New South Wales
PAH	Polycyclic Aromatic Hydrocarbon
PID	Photoionisation Detector

PSI	Preliminary Site Investigation
QA/QC	Quality Assurance and Quality Control
QC	Quality Control
RPD	Relative Percentage Difference
SWL	Standing water levels
TRH	Total Recoverable Hydrocarbons

1 INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Centurion Group Pty Ltd (the Client) to carry out a Detailed Site Investigation (DSI) at 18 Randwick Close, Casula, New South Wales (NSW) (the site).

It is understood that the Client intends to develop the site for mixed use and aged care development. No development plans have been provided to CES. The Site is legally described as Lot 104 in Deposited Plan (DP) 863214. The Site location is presented in **Figure 1**, with a borehole and groundwater monitoring well plan presented as **Figure 2**.

This DSI has been prepared to assist with the identification of potential areas of environmental concern arising from the Site's historical use, and to identify any potential contamination which may have occurred at the Site or from neighbouring sites, and to assess the suitability of the Site, with respect to contamination, for the proposed aged care development.

This report has been prepared in general accordance with the applicable legislation and guidelines including but not limited to:

- *National Environmental Protection Measures (Assessment of Site Contamination) Measure 1999 – Schedule B2* (NEPC), 2013); and
- *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land (NSW EPA, April 2020)*.

The DSI was undertaken based on the *Sampling and Analysis Quality Plan* (SAQP)[1] (CES Document Referenced CES161003-HC-AD, dated 10 August 2020) following the findings and recommendations of the *Preliminary Site Investigation* (PSI)[2] (CES Document Referenced CES161003-HC-AC, dated 1 February 2017).

[1] CES (2020), *Sampling and Analysis Quality Plan, 18 Randwick Close, Casula NSW*, dated 18 August 2020, Document Reference CES161003-HC-AE.

[2] CES (2017), *Stage 1 – Preliminary Site Investigation, 18 Randwick Close, NSW*, dated 1 February 2017, CES Document Reference CES161003-HC-AC.

2 SCOPE OF WORK

To complete the DSI, CES carried out the following scope of works:

- Completion of an intrusive soil investigation and sampling programme in accordance with Table A of the *Sampling Design Guidelines* (NSW EPA, 1995) [3] which comprised:
    - Preparation of a project specific Project Safety Plan (PSP), sufficient for both the environmental and geotechnical drilling scopes;
    - Review of Dial Before You Dig (DBYD) services plans;
    - Engaged a certified line locator to clear borehole locations of services and conduits;
    - Drilling of 13 boreholes implementing hand auger and push tube drilling methods;
    - Logging of boreholes by to record detailed observation of soil characteristics. Soils were visually screened during drilling for asbestos and visual or olfactory indicators of contamination;
    - Screened soil samples using a calibrated Photo-ionisation Detector (PID);
    - Selection of 20 soil samples based on field screening and assessment and submission of selected samples to a NATA accredited laboratory for a broad analytical suite including Total Recoverable Hydrocarbons (TRH), Benzene Toluene Ethylbenzene and Xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAH), Polychlorinated Biphenyls (PCB), Organochlorine and Organophosphate Pesticides (OCP/OPP), 8 common metals and metalloids, and/or asbestos;
    - Selection of one soil sample for pH, Total Organic Carbon, Cation Exchange Capacity, Clay Content and Iron to provide soil characteristics used to calculate site specific ecological criteria;
    - Development of three existing monitoring wells installed by others to improve well performance and maximise the potential for the obtained water sample to be representative of the formation groundwater quality;
    - Collection of three groundwater samples from the existing monitoring wells using low flow sampling techniques. The groundwater samples were submitted to a

[3] NSW EPA (1995) recommends 23 sampling locations for a 1.3Ha area. It is noted that 10 boreholes were previously completed as part of the PSI.

NATA accredited laboratory for a broad analytical suite including TRH, BTEX, PAH, and 8 common metals;

- Implemented a QAQC programme for sampling works consisting of:
  - The collection of 5% duplicate and 5% triplicate samples for soil and groundwater, which meets the requirements of the ASC NEPM (NEPC 1999 as amended 2013) for the collection of Quality Assurance and Quality Control (QAQC) replicate samples;
  - Collection of rinsate, trip spike, and trip blanks

- Preparation of a conceptual site model (CSM) in accordance with the *National Environmental Protection Measures (Assessment of Site Contamination) Measure 1999 – Schedule B2* (NEPC), 2013); and
- Preparation of this Detailed Site Investigation Report prepared in general accordance with the *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2020) which presents the soil sampling programme and presents a site specific CSM, and makes outline recommendations with respect to further investigation, remediation or contamination management, as required.

3 ENVIRONMENTAL SITE SETTING

The site information presented below is based on The Stage 1 - *Preliminary Site Investigation* (CES, 2017) which reviewed government and publicly available information sources.

3.1 *SITE IDENTIFICATION*

The site is located at 18 Randwick Close, Casula, New South Wales (NSW) 2170, within the Local Government Area (LGA) of Liverpool. The site covers an area of approximately 1.3 hectares, and is legally identified as a single lot, Lot 104 in Deposited Plan (DP) 863214 (**Figure 1**). The geographical extent of the site is presented in Table 1 below.

Table 1: Geographical extent of site

Corner/point of site	Eastings	Northings
Southeast corner of site	305670mE	6241732.88mN
Northeast corner of site	305688.92mE	6241763.18mN
Southwest corner of site	305590.52mE	6241660.05mN

Northwest corner of site	305627.56mE	6295070.50mN
Western point of site	305538.63mE	6241737.21mN
Centre of site	305626.49mE	6241723.03mN

3.2 *SITE ZONING*

Liverpool Local Environmental Plan (LEP) 2008 indicates that the site is currently zoned "R4 – High Density Residential".

3.3 *SITE DESCRIPTION*

The subject site is located within a mixed public recreation and residential district of Casula. The site is accessed via Randwick Close and/or Kurrajong Road and is largely trapezoidal in shape. At the time of the site inspection, the property included:

- Open space with stockpiled timber material along the centre of the northern boundary. No buildings were observed on site at the time of the site inspection.

During the site inspections there were no signs of distressed vegetation (an indication of potential environmental impacts) and in the accessible areas observed, no surface staining indicative of surface spills that could have impacted underlying soil and groundwater.

There was no evidence of above ground or below ground fuel storage tanks on the site.

A photographic log is presented in **Appendix A**.

3.4 *SURROUNDING LAND USE*

Based on observations from the site inspection, the surrounding land use comprised the following:

- **North** – Kurrajong Road runs parallel with the northern boundary of the site, and further north lies residential properties and Lurnea High School (approximately 430m north-northwest);
- **East** – Daruk Park lies to the east of the site, and adjacent, Casula Mall shopping centre, lying further east. Beyond Casula Mall are residential properties.
- **South** – Single and double story residential properties, Liverpool City Council Library (approximately 150 m south-southeast) and Casula High School (approximately 550m southwest); and

- **West** –Immediately bordered by single and double story residential properties and the M5 Motorway, Prestons Public School (approximately 500m west) and NTL Transmitting Station (approximately 1.1km west-northwest). Further west lies an industrial area.

3.5 *SENSITIVE RECEPTORS*

Sensitive receptors are presented in Table 2.

Table 2: Sensitive Receptors Onsite and Nearby

Sensitive Receptor	**Receptor Type**	**Orientation and Distance from Site**
Current/Future Site Workers High Density Residential/Aged Care	Occupational Risk – Acute Risk only Human Health – High Density Residential and Aged Care	0 m
Medium to high density residences	Human Health – Residential	50 m North and East
Low density residences	Human Health – Residential	0m and 100 m North, East, south, west
Unnamed Park	Human Health – Recreational; Ecological.	50m East
Glenfield Creek and Georges River	Ecological.	900 to 1500 m West

3.6 *CURRENT AND PROPOSED SITE USE*

At the time of the PSI, the Site was vacant. The Site was previously owned by Ingham Processing Pty Ltd and used for the processing of poultry.

Based on information provided by the client, the proposed redevelopment consists of a potential mixed use and aged care development. It is understood that the proposed development will occupy 50% of the available floor space ratio (FSR) with a residential aged care facility that is to be integrated into a larger mixed development of suitable complimentary tenancies.

It is understood that the project may also include two levels of basement car parking to an indeterminate depth. Based on this information, receptors of the site, including workers, residents

and visitors are likely have access to limited surface soils in peripheral small landscaped areas and lawns. As a result, opportunities for direct access to soil by residents of these buildings are therefore minimal but there will be some potential for residents to inhale, ingest or come into dermal contact with dust (particulates) derived from the soil on the site.

3.7 *TOPOGRAPHY*

The site was observed during the site inspection to have a downward east facing slope.

3.8 *SURFACE WATER*

The nearest surface water features are Glenfield Creek located approximately 900m east of the site, which feeds the Georges River, located approximately 1,540 m east of the site boundary. No channels or drains were observed connecting the site to the Glenfield Creek. Therefore, the site poses a low risk to surface water bodies.

3.9 *GEOLOGY*

Reference to the Penrith 1:100 000 Geological Series Sheet 9030 (1991) indicates that the majority of the site is underlain by Bringelly Shale of the Wianamatta Group of Middle Triassic Age. This formation typically comprises of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff. The nature of the formation is considered alluvial and estuarine.

Intrusive field works undertaken during the PSI (CES, 2017) indicated fill comprising of sandy, gravelly, clays up to a maximum depth of approximately 2.2m, overlying naturals clays and shales.

3.10 *HYDROGEOLOGY*

It is expected that groundwater would flow to the east, towards Glenfield Creek and Georges River.

A search of the Department of Primary Industries Office of Water database (https://realtimedata.waternsw.com.au/, accessed 4 September 2020) indicates there are no registered groundwater abstraction wells located within 500m of the site.

3.11 *SENSITIVE LOCAL ENVIRONMENTS*

The site is not located within an Underground Petroleum Storage System (UPSS) environmentally sensitive zone. UPSS environmentally sensitive zones represent areas that are likely to be vulnerable to the contamination from leaking UPSS due to geology or groundwater properties.

3.12 *ACID SULFATE SOILS*

The classification of acid sulphate soils (ASS) is based on the likelihood that these soils will be present in particular areas at specific depths. Soils are classed from 1 (high probability presence) to 5 (low probability presence).

There is no acid sulfate soil risk mapped for the site in the Liverpool LEP (2008) Acid sulfate soils map (sheet: ASS-013). As a result, the Acid Sulfate Soils risk to the development has not been considered further.

3.13 *NSW CONTAMINATED SITE REGISTER*

The site is located within 1000 m of one site listed under the NSW EPA Contaminated Lands List:

- Caltex Service Station located 971m south.

Due to the distance to this site and the likely groundwater flow direction, the subject site would not be impacted by contamination from the Caltex site and has not been considered further.

3.14 *PFAS*

With respected to potential PFAS contamination at the site it is noted that:

- The site is not, nor is it located near, a site subject to the NSW EPA PFAS investigation Programme;
- The site does not have a history of bulk fuel storage likely to have required the use and retention onsite of PFAS containing Aqueous Film Forming Foams (AFFF); and
- An internet search for historic fires at the Site indicated no evidence of fires on the Site.

In the absence of a source or PFAS at the site, investigation of PFAS concentrations in soil and groundwater is not considered to be required.

4 PREVIOUS SITE INVESTIGATIONS (

CES was commissioned by Heymann Cohen Pty Ltd (HC) (on behalf of Besol Pty Ltd) to carry out a *Stage I – Preliminary Site Investigation* (CES161003-HC-AC, dated 1 February 2017) of the property located at 18 Randwick Close, Casula, New South Wales.

The PSI was prepared to assist with the identification of potential areas of environmental concern arising from the sites historical use, and to identify any potential contamination which may have occurred at the site.

CES completed the following scope of works:

- Research of publicly available documentation to assess the history of the site, the identification of potential sources of contamination and the review of sensitive human and environmental receptors on or in the vicinity of the site;
- A site inspection to visually identify potential sources of contamination;
- Evaluation of soil sampling and analysis data obtained from geotechnical investigation; and
- Preparation of the *Stage I – Preliminary Site Investigation* report.

Detailed information relating to the site history including historical title and historical aerial photograph review is presented in the PSI report.

No exceedance of human health or environmental criteria was identified in the analysis results for the fill samples from the ten borehole locations. Additionally, results were compared to NSW EPA waste classification criteria and were within the criteria for classification as general solid waste.

Excerpts of CES161003-HC-AC are provided in the PSI (CES, 2017).

5 FIELDWORK PROGRAMME

The fieldwork programme follows the methodology outlined in:

- Consulting Earth Scientists , *Sampling and Analysis Quality Plan, 18 Randwick Close, Casula,* dated 10 August 2020. CES Document Reference: CES161003-HC-AE.

5.1 *SOIL INVESTIGATION*

5.1.1 Sampling Pattern

To determine the degree of potential contamination across the site, CES carried out a systematic sampling pattern where sampling points were selected at regular and even intervals, within the constraints of the site.

The location of the boreholes is presented in Figure 2.

5.1.2 Sample Density

Table A of the NSW EPA (1995) Sampling Design Guidelines recommends 23 sample locations for a site 1.3 ha in size. Ten sampling locations were investigated during the PSI, as a result an additional 13 additional sample locations were assessed as part of the fieldwork programme to comply with the sample density prescribed.

5.1.3 Depth Intervals of Sampling

Soil samples were collected at surface, 0.50 m, every consecutive metre, and of any strata identified as having visual or olfactory evidence of contamination. The total depth of each borehole location was the shallower of 1 metre below the fill/natural interface or 2.5 metres below ground level (mbgl).

A minimum of one sample from each borehole (total of 20 samples) was submitted for analytical analysis.

5.1.4 Method of Sampling Collection

Care was taken to ensure that representative samples were obtained from the depth required and that the integrity was maintained. Samples were collected directly from the cutting edge of the excavator bucket.

A new pair of nitrile gloves were worn for each different sample.

Care was taken when collecting samples to ensure the most representative sample of the targeted material was sampled.

5.1.5 Field Screening

Field screening of samples was carried out by a combination of olfactory and visual contamination indications such as odours, staining or the presence of building rubble etc and using a calibrated photo-ionisation detector (PID) to screen for volatile organic compounds. Calibration records are presented in Appendix B.

5.1.6 Sample Collection

Samples were collected directly from hand augers or push tubes using new nitrile gloves for each sample and placing the soil directly into laboratory supplied containers.

5.1.7 Decontamination Procedures

Dedicated sampling equipment (new nitrile gloves) and laboratory prepared sample containers were used.

5.1.8 Sample Containers

Soil sample containers comprised glass jars with Teflon lined lids supplied by the primary laboratory. The jars were completely filled leaving no headspace, labelled with the job number, date, unique sampling point identification and initials of the project Environmental Geologist.

5.1.9 Method of Sample Storage and Handling

The samples were immediately placed in an esky/cool box in which ice has been added, to keep the samples cool. The samples in the cool box were then transported to the laboratory.

5.1.10 Sample Logging

A log of boreholes and soil samples collected was completed during fieldwork by a qualified Environmental Geologist. The log records the following data:

- Sample number and depth;
- Soil classification, colour, consistency or density, odour and moisture content;
- Groundwater colour, odour, suspensions;
- Depth of borehole;

- Method of drilling; and
- The depth of first encountered free water.

Borehole logs are present in **Appendix C**.

5.2 *GROUNDWATER SAMPLING ANALYSIS PLAN*

Three boreholes were converted to groundwater monitoring wells during the PSI. Installation and development of the three groundwater monitoring wells (GW1, GW2, and GW3) was undertaken on 13 August 2020. Groundwater sampling of the monitoring wells was undertaken on 21 August 2020.

All sampling was conducted in consideration of Schedule B2 of NEPM 1999 (amended 2013), and in general accordance with the NSW EPA guidelines and Australian Standards documents on assessment of contaminated lands.

5.2.1 Well Construction

The three groundwater monitoring wells were installed in accordance with *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2012).

The wells were constructed with PVC casing that was screened across the groundwater interface. A sand filter pack extended from the base of the borings to 1.0 m above the top of the slotted PVC casing and was sealed with 1 m hydrated bentonite pellets above the sand pack.

The wells were finished with end caps and gatic covers. Well construction details are presented on the borehole logs provided in the PSI (CES 2017).

5.2.2 Groundwater Monitoring Well Development

Groundwater well development was required to ensure that the groundwater sampled was representative of the groundwater formation. Groundwater wells were developed on the 13 August 2020. A total of 3 well volumes were removed from each well during development.

5.2.3 Sampling Methodology

The purging process was undertaken by the low-flow method using a peristaltic pump. This was done using a low flow pump with the inlet set at the midpoint of the response zone (slotted pipe). Consideration was given to water strike information, where available for positioning of the inlet sampling point.

A calibrated and decontaminated water quality meter was used during the purging process to assess chemical equilibrium by measuring pH, redox potential (Eh), electrical conductivity (EC), dissolved oxygen (DO) and temperature. The parameters were considered stable and at equilibrium when three consecutive readings were within ±10 %. Stabilisation of the water quality parameters s considered to represent formation specific (at the point of sampling) water being drawn into the parameter measurement cup. As such, the field parameter stabilisation was used to assess when water was to be sampled. Sampling commenced after the parameters stabilised.

Groundwater samples were collected from the pump tubing directly into the appropriate sampling bottles supplied by the primary laboratory. Copies of the calibration records for the water quality meter and field data sheets and are provided in **Appendix B** and **Appendix D**, respectively.

5.2.4 Decontamination Procedures

Wells were developed, purged and sampled with new dedicated tubing; therefore, decontamination of groundwater sampling equipment was only required for the oil / water interface probe which was cleaned using Decon solution and deionised water.

5.2.5 Sample Containers, Methods or Sample Storage and Handling

All sample containers were labelled with the sample number, project number, date sampled and initials of the sampler. This information was also recorded on the Chain-of Custody (COC) form.

Samples were collected in laboratory prepared containers. Once containers were filled, the caps were checked to ensure that they were secure (and that there were no air / bubbles / head space) then placed within a cool box in which ice had been added to keep the samples cool. At the end of the day, the cool box was transported to the nominated laboratories.

5.3 *ANALYTICAL PROGRAMME*

5.3.1 Laboratories

Primary and duplicate soil and groundwater samples were sent to Envirolab Services Pty Ltd (Envirolab). Triplicate samples were sent to Australian Laboratory Services (ALS). Both laboratories are NATA accredited for the analysis requested.

5.3.2 Field Parameters

Standard field measurements were taken during purging, to ascertain when equilibrium was reached, prior to the collection of groundwater samples. Field measurements included:

- Dissolved oxygen;
- Electrical conductivity;
- Temperature;
- Redox potential; and
- pH.

Field measurements were taken using a calibrated water-quality meter. Field parameters are presented in Table T6 located within the Tables Section of this report.

5.3.3 Laboratory Testing

5.3.3.1 *Soil*

The analytes selected for soil testing were determined based on the results of the desktop study. The analytes comprised:

- TRHs;
- BTEX;
- PAHs;
- OCP/OPPs;
- PCBs
- Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn); and
- Asbestos.

5.3.3.2 *Groundwater*

The analytes selected for groundwater testing were determined based on the results of the desktop study. The analytes comprised:

- TRHs;
- BTEX;
- PAHs; and
- Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn).

5.4 *QA/QC DOCUMENTATION*

While onsite, the supervising Environmental Geologist filled out a copy of a 'sample register', which documents:

- Time of sample collection;
- Weather;
- Unique sample identification number; and
- Sample location and depth.

All samples were classified in the field based on soil/fill/groundwater characteristics and obvious signs of contamination such as discolouration or odour were noted on the field logs.

All samples, including QC samples, were transported to the primary and check laboratories under COC procedures and maintained in an ice-filled cooler. The following details were recorded on the COC form:

- Site identification;
- The sampler;
- Nature of the sample;
- Collection date;
- Analyses to be performed;
- Sample preservation method; and
- Departure time from site.

6 SITE ASSESSMENT CRITERIA

Tier 1 Screening Criteria to be used for the assessment of the analytical data are presented below. These are generic assessment criteria derived from standard land uses and exposure settings and, as such, are inherently conservative. These Tier 1 criteria are to form the basis for assessment of the suitability of the site for the proposed residential development.

6.1 *SOIL INVESTIGATION AND SCREENING LEVELS*

Health investigation levels (HILs) have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3 m below the surface for residential use.

To address potential health impacts at the site, CES compared the analytical testing results against a set of health-based soil investigation appropriate for the proposed land-use. That is, the HIL has been set at a level that provides confidence that contaminant concentrations below the HIL will not adversely affect human health.

As described in Section 1.1, the future site land-use is proposed mixed use and aged care development; however, since CES is not in possession of development plans and as such cannot confirm the development to take place at the site, the NEPM (2013) HIL A (residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), including childcare centres, preschools, and primary schools)) criteria have been adopted as a conservative approach for the assessment of human health. Additionally, NEPM (2013) HSL A & HSL B (low-high density residential for clay) criteria has been selected for the assessment of human health.

NEPM (2013) indicates that while protection of human health often drives the first stages of assessment, protection of the environment (terrestrial and aquatic) should be a consideration for all site assessments. The closest waterbody, Glenfied Creek, is approximately 1.5 km east of the site. However, as no channels or drains were observed connecting the site to the Glenfield Creek, the site poses a low risk to surface water bodies.

To address the potential ecological impacts at the site, CES compared the analytical testing results against a set of ecological investigation and screening levels appropriate for the proposed land use of mixed use and aged care development. The NEPM (2013) EIL criteria adopted was generated using the CSIRO for *NEPM Ecological Investigation Level Calculation Spreadshee*t (CSIRO, 2010). Values for pH, cation exchange capacity (CEC), organic content, clay content, and iron content used in the EIL calculation are provided in Table T11. Additionally, the NEPM (2013) ESL (fine soil texture) was adopted for the ecological assessment.

Health screening levels for asbestos in soils, which are based on scenario-specific likely exposure levels, are adopted from the Western Australia, Department of Health (WA DoH) guidelines. Based on the proposed end use, mixed use and aged care development, the Residential A exposure setting has been selected. As such, the HSL for bonded asbestos containing materials (ACM) is 0.01% for asbestos fines, 0.001% for fibrous asbestos, and no visible asbestos at the surface.

6.2 *GROUNDWATER*

6.2.1 Human Health – Groundwater Health Screening Levels

For the assessment of risks posed to human health for site users, HSLs have been developed for selected petroleum compounds and carbon bands and are applicable to assessing human health risk

via the inhalation pathways. These HSLs are presented in Table 1A(4) in the *Guideline on Investigation Levels for Soil and Groundwater* (Schedule B1, NEPC, 2013).

The Site is situated within an urban environment and a registered groundwater search indicated no registered bores within 500 m of the site. In addition, the site will obtain drinking water from reticulated supply, rather than through the abstraction of groundwater. Therefore, the risk of groundwater extraction is considered low and acceptable, hence Drinking Water Guidelines are not considered relevant to the investigation.

6.2.2 ANZG for Fresh and Marine Water Quality

For protection of Aquatic Ecosystems and protection of aquatic foods, the *Toxicant Default Guideline Values* published in *ANZG 2018 Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality* (online: http://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search) have been selected in substitution of the groundwater investigation levels (GILs) presented in the *Guideline on Investigation Levels for Soil and Groundwater* (Schedule B1, NEPC, 2013).

6.2.3 Visual Amenity

For protection of Visual Amenity:

Aesthetic values for oils and petrochemicals comprise a visual and olfactory assessment and should not be noticeable as a visible film on the water, nor should they be detectable by odour.

7 QUALITY ASSURANCE AND QUALITY CONTROL

The field and laboratory QA/QC programme for this project is consistent with ASC NEPM (NEPC, 2013) requirements. Laboratory Certificates of Analysis, Sample Receipt Notification, and Chain of Custody documentation is presented as **Appendix F**.

7.1 *FIELD QA/QC PROGRAMME*

Soil and groundwater samples were collected by an experienced Environmental Geologist, under established CES protocols. CES personnel have been trained in sample collection and handling techniques.

For the purpose of assessing the data quality presented in this report, CES collected and analysed QAQC samples while the laboratory completed their own Quality Control. This section of the

report focuses on the methodology used in the field investigation to ensure quality data has been collected. A discussion of the deviations from the QA/QC Acceptance Limits given in Table 3 is also provided.

Table 3: QA/QC Data Acceptance Criteria

QA/QC Sample Type	Method of Assessment	Acceptable Range
Field QA/QC		
Blind and Split Replicates	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{Average}$ Where: X_1 and X_2 are the concentration of the original and replicate samples.	*The acceptable range depends upon the levels detected:* ▪ *0 – 100% RPD (When the average concentration is < 5 times the PQL)* ▪ *0 – 75% RPD (When the average concentration is 5 to 10 times the PQL)* ▪ *0 – 50% RPD (When the average concentration is > 10 times the PQL)*
Blanks (Rinsate, Trip and Field Blanks)	Each blank is analysed as per the original samples.	*Analytical Result < PQL*
Laboratory-prepared Trip Spike	The trip spike is analysed after returning from the field and the % recovery of the known spike is calculated.	*70% - 130%*
Laboratory QA/QC		
Laboratory Duplicates	Assessment as per Split Replicates.	*The acceptable range depends upon the levels detected:* ▪ *0 – 100% RPD (When the average concentration is < 4 times the PQL)* ▪ *0 – 50% RPD (When the average concentration is 4 to 10 times the PQL)* ▪ *0 – 30% RPD (When the average concentration is > 10 times the PQL)*
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the % Recovery of the known spike or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	Surrogates: 70% – 130% Matrix Spikes: 70% - 130% (Organics) 80% - 120% (Inorganics) LCS: 70% - 130% (Organics) 90% - 110% (Inorganics)

QA/QC Sample Type	Method of Assessment	Acceptable Range
Method Blanks	Each blank is analysed as per the original samples.	*Analytical Result < PQL*
Note: *PQL = Laboratory Practical Quantitation Limit or the minimum detection limit for a particular analyte.*		

7.1.1 Replicate Samples

One duplicate (blind) and one triplicate (split) sample for both soil and groundwater were collected and analysed in the laboratory. This exceeds the requirements of the ASC NEPM (NEPC 2013) of 5%.

The calculated Relative Percentage Difference (RPD) for the primary sample and blind replicates are presented in Table T3 for soil and Table T8 for groundwater. All calculated RPD conformed to the Data Acceptance Criteria (DAC) presented in Table 3 with the exception of the following within soil:

- Chromium RPD (75.9%) between primary sample SB1/0.1 and triplicate sample QS1A;
- Nickel RPD (78.3%) between primary sample sample SB1/0.1 and triplicate sample QS1A; and
- Zinc RPD (58.8 and 100%) between primary sample SB1/0.1 and duplicate sample QS1 and triplicate sample QS1A, respectively.

All calculated RPD conformed to the Data Acceptance Criteria (DAC) presented in Table T1 with the exception of the following within groundwater:

- Copper RPD (136%) between primary sample GW3 and duplicate sample QW1; and
- Zinc RPD (141.2%) between primary sample GW3 and duplicate sample QW1.

These outliers can likely be contributed to the heterogeneity of the samples, different soils within the soil samples and silt within the groundwater which may not have been evenly distributed between the samples. As the samples were collected as per CES procedures and kept under laboratory conditions, these outliers will not have an impact of the overall data quality.

7.1.2 Trip Blank

The results of the groundwater and soil Trip Blank samples conformed to the DAC specified in Table 3 with all analytical results recorded below the laboratory PQL. Results are presented in Table T4 and Table T9.

7.1.3 Trip Spike

The results of the groundwater and soil Trip Spike samples conformed to the DAC specified in Table 4 with all recoveries within the 70-130% criteria. Results are presented in Table T4 and Table T9.

7.1.4 Rinsate Samples

The results of the rinsate samples collected from the hand auger on the 13 August 2020 and from the interface probe on the 21 August 2020 conformed to the DAC specified in Table 4. Results are presented in Table T5 and Table T10.

7.2 *LABORATORY QA / QC PROGRAMME*

The reliability of test results from the analytical laboratories were monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by the NATA registered laboratories specified sample tracking procedures, methods of extraction, analysis, PQLs and acceptance criteria for results.

No laboratory QAQC outliers were reported by the laboratory with the exception of some quality control sample frequency outliers. Envirolab report 249069 indicates:

- Percent recovery is not possible for 8 metals in soil due to the high concentration of element/s in the sample/s. However, an acceptable recovery was obtained for the Laboratory Control Spike (LCS); and
- 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.

These outliers will not have an impact of the overall data quality.

7.3 *QAQC ASSESSMENT*

The field and laboratory QA/QC programmes demonstrate that the data provided by the laboratory is representative of the properties of the samples provided by CES. The samples were collected in accordance with established CES Standard Operating Procedures. The QA/QC assessment did not detect any issues with the quality of the data collected therefore CES has a high degree of confidence in the quality of the data provided, and the data within this report is representative and suitable for the assessment.

8 RESULTS

8.1 *INTRUSIVE INVESTIGATION*

8.1.1 Encountered Subsurface Conditions

A subsurface model has been prepared and is presented in Table 4.

The depths of the various strata are based on the depths encountered at the borehole locations and may be different at other parts of the Site. Detailed descriptions and depths of materials encountered are presented on the borehole logs included in **Appendix C**.

It should be noted that the depths provided in this table relate to the ground level at the time of the DSI in August 2020.

Table 4: Inferred Subsurface Model

Geotechnical Unit	Approximate Depth to Top of Unit (m)	Approximate Thickness (m)	Typical Description
Unit 1 – Fill	0.0	~0.3 – 2.3	Silty, sandy, clayey, GRAVEL; fine to medium grained, medium plasticity, organic material, some brick fragments and aggregate, no odours or staining, brown/grey, moist
Unit 2 – Natural	0.3	>3.3	CLAY: medium plasticity, shale fragments and ironstone gravels, no odours or staining, grey/red/yellow/orange, dry

8.1.2 Field Screening

No soils encountered during fieldwork exhibited visual or olfactory indicators of contamination such as odours or staining.

PID screening of soils did not detect VOC in soil headspace in excess of 1.6 ppm (detection limit of the equipment) indicating volatile contamination is unlikely. PID results are presented on borehole logs presented as **Appendix C**.

No asbestos or suspected ACM were observed.

8.1.3 Laboratory Analysis

Laboratory Certificates of Analysis, Sample Receipt Notification, and COC documentation is presented as **Appendix F**.

A summary of laboratory analysis and a comparison of the analysis results to the ASC NEPM (NEPC 2013) HIL A/HSL A, EIL/HSL Urban residential/Public Open Space, and the TRH Management Limits for Residential, Parkland and Public Open Space (fine) are presented in Table T1 located within the Tables Section of this report.

An assessment of the laboratory results indicates that the contaminants of potential concern do not exceed the conservative Tier 1 human health screening criteria.

8.2 *GROUNDWATER INVESTIGATION*

8.2.1 Groundwater Gauging

Standing groundwater levels were measured in the monitoring wells using a calibrated interface probe. No free LNAPL was detected in the groundwater monitoring wells. The groundwater readings is presented in Table T6. Groundwater ranged between 3.47 metres below top of casing (mBTOC) to 5.17 mBTOC.

8.2.2 Field Observations

The details of field observations, including standing water levels, colour, turbidity and odours are presented in Table T6.

8.2.3 Field Parameters

Groundwater field parameters data is presented in Table T6. These parameters indicated that the water beneath the Site was generally neutral, moderately to well oxygenated, and a strongly to mildly reducing environment was present.

Field data sheets are presented in **Appendix D**. Calibration certificates for the water quality meter and interface probe are presented in **Appendix B**.

8.2.4 Groundwater Laboratory Analytical Results

Laboratory Certificates of Analysis, Sample Receipt Notification, and COC documentation is presented as **Appendix E**.

A summary of laboratory analysis and a comparison of the analysis results to the ASC NEPM (NEPM 2013) HSL A and B Clay 2m to <4m and ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Fresh Water 95% species protection)) are presented in Table T7.

The laboratory detected concentrations below the adopted groundwater criteria with the exception of the following:

- Copper in GW1 (34 µg/L), GW2 (29 µg/L) and GW3 (4 µg/L) exceeded the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Marine water, 95% species protection) (ANZG, 2018) criteria of 1.3 µg/L;
- Nickel in GW1 (170 µg/L) exceeded the ANZG (2018) criteria of 7 µg/L; and
- Zinc in GW1 (87 µg/L) and GW2 (60 µg/L) exceeded the ANZG (2018) criteria of 8 µg/L.

9 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) was developed in consideration of the historical information, current site conditions, and analytical results. The CSM takes into account the possible future mixed use and aged care redevelopment.

9.1 *POTENTIAL SOURCES OF CONTAMINATION*

Historic Agricultural/ Commercial Activities

The historical review and site inspection indicate the site has been occupied by agricultural and commercial operators including poultry processing plant. The use of petroleum products such as fuels, oils, and hydraulic oils, as well as the use of pesticides may be associated with this use. Elevated nutrient levels may also be associated with waste products of poultry processing activities. In consideration of analytical results, contaminants of potential concern (COPC) include:

- Polycyclic Aromatic Hydrocarbons (PAHs); and
- Heavy Metals (in particular chromium, copper, lead, nickel, and zinc).

Uncontrolled Fill

The site slopes moderately to the northeast and some cut and fill activities would have occurred during the development of the site. The origin of the fill is unknown and the potential exists for this material to be contaminated. COPC typically encountered in uncontrolled fill include:

- PAHs; and
- Heavy Metals (in particular chromium, copper, lead, nickel, and zinc).

9.2 *POTENTIAL OFF-SITE SOURCES OF CONTAMINATION*

There have been no potential off-site sources of contamination identified within the surrounds of the site.

9.3 *POTENTIAL PATHWAYS*

The pathways through which contaminants may reach receptors are in part dependent on the nature and behaviour of the contaminant. The following potential pathways have been identified:

- Ingestion / dermal contact during construction (acute risks);
- Indoor and outdoor inhalation, dermal contact and incidental ingestion of contaminants in the particulate form (dust);
- Limited soil ingestion and dermal contact due to the small lawns and landscaping.

9.4 *RECEPTORS*

Potential sensitive receptors (on and off-site) are listed below:

- Future construction workers during the construction of the proposed redevelopment (acute only);
- Future residents and employees;
- Groundwater beneath the site;
- Surface Water; and
- Neighbouring residents.

10 DISCUSSION

10.1 *INTRUSIVE INVESTIGATION*

As no COPC concentrations exceed the adopted criteria, the soil and fill underlying the site are considered to be a low and acceptable risk to human health and the environment.

10.2 *GROUNDWATER*

With respect to metal concentrations in excess of the screening criteria, detected in GW1, GW2, and GW3, the following is noted:

- Groundwater flow is likely to be to east, towards Glenfield Creek which feeds the Georges River, with the Georges River the likely receiving water body;
- The Georges River is a highly disturbed water course, therefore the 95% species protection criteria for moderately disturbed ecosystems may be overly conservative for the purposes of this assessment;
- Concentrations of copper, nickel and zinc in site soils were not elevated to an extent that would indicate a source of groundwater contamination resulting from the metals was located onsite during the sites history;
- Concentrations in GW1 (upgradient well) were higher than in GW2 and GW3 (down gradient wells) which may indicate that the concentrations are indicative of background levels or a result of offsite sources and not contamination produced by the Site's historical use;
- The wells are generally screened in clays and Bringelly Shale which was found to underlie the site. Based on the borehole logs for the site, these lithologies are likely to have low permeability;

In consideration of the above, the groundwater exceedances are unlikely to pose an unacceptable risk to Glenfield Creek or the Georges River.

In consideration of the above, remediation or management of groundwater is not required for the proposed development.

10.3 *SITE SUITIBILITY*

Based on the CSM and investigation results, the Site has not been contaminated based on current or historic land use. The Site is suitable for the proposed use as a mixed use and aged care facility (Residential A/B).

11 LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in geotechnical and environmental investigations before being used for any other purpose. CES accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

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

12 REFERENCES

ANZG (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

CES (2016), *Preliminary Geotechnical Investigation Report 18 Randwick Close, Casula, NSW* dated 7 December 2017, CES Document Reference CES161003-HC-AB.

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CES (2020), *Sampling and Analysis Quality Plan, 18 Randwick Close, Casula NSW*, dated 18 August 2020, Document Reference CES161003-HC-AE.

NEPC, 2013: National Environment Protection Council (2013*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(1) Guideline on Investigation Levels For Soil and Groundwater.*

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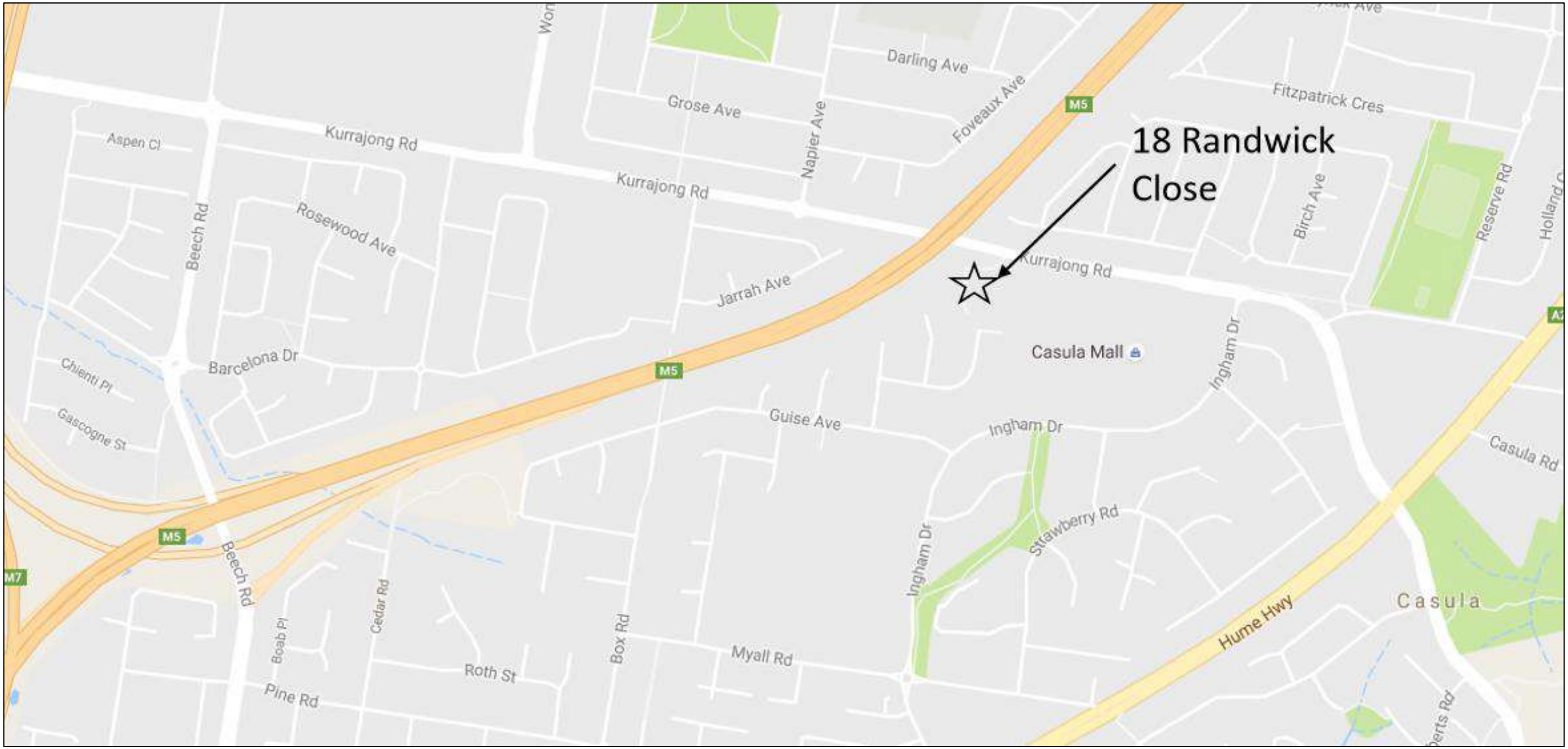
NSW EPA (1995). *Sampling Design Guidelines*. EPA 95/59. September 1995.

NSW EPA (2019) *List of Contaminated Sites Notified to EPA* as of 14 August 2020. NSW Government.

NSW EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*.

NSW Office of Environment and Heritage (OEH), 2011, *Guidelines for Consultants Reporting on Contaminated Sites*.

Figures



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Title:

Figure 1: Site Location Plan

CES Project ID: CES161003-HC-AF	Date: 04.09.20
Prepared by: A. Carras	Checked by: B. Ren

Legend

- Borehole (CES 2017)
- Groundwater Well (CES 2017)
- Borehole Current Investigation
- Site Boundary

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Title:

Figure 2: Site Layout Plan

CES Project ID:	Date:
CES161003-HC-AF	04.09.20
Prepared by: A. Carras	Checked by: B. Ren

Tables

Table T1: Summary of Analysis results and Comparison to Tier 1 Screening Criteria

		Lab Report	HIL A/HSL A Low density residential (HSL 0-<1 m Clay)	EIL/ESL Urban residential and Public open Space	TRH Management Limits residential/parkland, fine grained soil	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069
		Job #				CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC
		Sample				SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5	SB7/1.0	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
		Depth				0.1	3.0	0.5	0.5	0.1	0.1	0.1	0.5	0.5	1.0	1.0	0.5	2.0	0.1	0.5	0.1	0.1	1.0	0.5	0.5
		Date Sampled				13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20	13.08.20
	Units	PQL	Childcare Area Site Option 1																					
TRH C6 - C9	mg/kg	25				<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH C6 - C10	mg/kg	25			800	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
vTPH C6 - C10 lessBTEX (F1)	mg/kg	25	50	180*		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Benzene	mg/kg	0.2	0.7	65		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	480	105		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	NL	125		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	2				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
naphthalene	mg/kg	1	5			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	3	110	45		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
TRH C10 - C14	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH C15 - C28	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH C29 - C36	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	50			1000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	mg/kg	50	280	120*		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C16-C34	mg/kg	100		1300	3500	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH >C34-C40	mg/kg	100		5600	10000	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Naphthalene	mg/kg	0.1		170		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05		0.7		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +vePAH's	mg/kg	0.05	300			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	3			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	3			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5	3			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	0.1	10			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	6			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	6			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	0.1	50			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	0.1	50			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	0.1	270			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.1	6			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	0.1	10			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	0.1	270			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	0.1		180		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	0.1	270			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	300			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	0.1	240			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	0.1	160			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1016	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	0.1	1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/kg	4	100	100		<4	<4	<4	<4	<4	<4	<4	<4	5	<4	<4	<4	<4	<4	<4	<4	<4	<4	8
Cadmium	mg/kg	0.4	20			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	1	100	450		20	4	10	5	69	5	19	40	10	8	4	9	4	6	7	11	66	1	8	15
Copper	mg/kg	1	6000	150		14	19	14	8	23	10	46	26	9	7	13	9	13	11	7	13	18	11	33	10
Lead	mg/kg	1	300	1100		18	4	10	5	4	5	5	6	6	8	4	6	5	6	5	7	4	5	17	13
Mercury	mg/kg	0.1	40			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	400	110		16	4	6	1	66	2	25	52	3	5	1	7	<1	6	6	11	56	<1	5	4
Zinc	mg/kg	1	7400	360		66	29	29	7	44	13	46	48	10	13	8	24	5	34	32	42	29	5	33	14

Table T2: Asbestos Laboratory Analytical Results

		Lab Report	HSL A Low density residential	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069	249069
		Project Number		CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC	CES161003-HC
		Sample		SB1/0.1	SB2/0.5	SB3/0.5	SB4/0.1	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5	SB8/0.5	SB9/0.1	SB9/0.5	SB10/0.1	SB11/0.1	SB12/0.5	SB13/0.5	QS1
		Depth		0.1	0.5	0.5	0.1	0.1	0.1	0.5	0.5	0.5	0.1	0.5	0.1	0.1	0.5	0.5	QS1
		Date Sampled		18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020	18.08.2020
	Units	PQL																	
Sample mass tested	g			581.75	442.37	470.76	693	605.02	592.87	418.57	589.22	450.86	585.96	583.37	394.87	555.25	462.86	448.36	619.92
Sample Description	-			Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-			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: 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	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	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	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	N/A		No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	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	--		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ACM >7mm Estimation*		<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mass / Dimension of Sample	-			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample Description	-			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Asbestos ID in materials	-			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trace Analysis	-			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table T3: Soil QAQC Assessment Results

			249069	249069	ES2028777001				
			CES161003-HC	CES161003-HC	CES161003-HC	Average	Blind RPD	Average	Split RPD
		Sample	SB1/0.1	QS1	QS1A				
		Depth	0.1				%		%
		Date Sampled	13.08.20						
	Units	PQL							
TRH C6 - C9	mg/kg	25	<25	<25	<10	N/A	N/A	N/A	N/A
TRH C6 - C10	mg/kg	25	<25	<25	<10	N/A	N/A	N/A	N/A
vTPH C6 - C10 lessBTEX (F1)	mg/kg	25	<25	<25	<10	N/A	N/A	N/A	N/A
Benzene	mg/kg	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Toluene	mg/kg	0.5	<0.5	<0.5	<0.5	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	1	<1	<1	<0.5	N/A	N/A	N/A	N/A
m+p-xylene	mg/kg	2	<2	<2	<0.5	N/A	N/A	N/A	N/A
o-Xylene	mg/kg	1	<1	<1	<0.5	N/A	N/A	N/A	N/A
naphthalene	mg/kg	1	<1	<1	<1	N/A	N/A	N/A	N/A
Total +ve Xylenes	mg/kg	3	<3	<3	<0.5	N/A	N/A	N/A	N/A
TRH C10 - C14	mg/kg	50	<50	<50	<50	N/A	N/A	N/A	N/A
TRH C15 - C28	mg/kg	100	<100	<100	<100	N/A	N/A	N/A	N/A
TRH C29 - C36	mg/kg	100	<100	<100	<100	N/A	N/A	N/A	N/A
TRH >C10-C16	mg/kg	50	<50	<50	<50	N/A	N/A	N/A	N/A
TRH >C10 - C16less Naphthalene (F2)	mg/kg	50	<50	<50	<50	N/A	N/A	N/A	N/A
TRH >C16-C34	mg/kg	100	<100	<100	<100	N/A	N/A	N/A	N/A
TRH >C34-C40	mg/kg	100	<100	<100	<100	N/A	N/A	N/A	N/A
Total +ve TRH (>C10-C40)	mg/kg	50	<50	<50	<50	N/A	N/A	N/A	N/A
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Benzo(b,j+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	<0.5	N/A	N/A	N/A	N/A
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
alpha-BHC	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
HCB	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
beta-BHC	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
gamma-BHC	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
delta-BHC	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Heptachlor Epoxide	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
gamma-Chlordane	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
alpha-chlordane	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endosulfan I	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDE	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endrin	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endosulfan II	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDD	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDT	mg/kg	0.1	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Endosulfan Sulphate	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Total +ve DDT+DDD+DDE	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dichlorvos	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dimethoate	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Diazinon	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Chlorpyriphos-methyl	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Ronnel	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Fenitrothion	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Malathion	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Chlorpyriphos	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Parathion	mg/kg	0.1	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Bromophos-ethyl	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Ethion	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Azinphos-methyl (Guthion)	mg/kg	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Aroclor 1016	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1221	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1232	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1242	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1248	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1254	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1260	mg/kg	0.1	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Total +ve PCBs (1016-1260)	mg/kg	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Arsenic	mg/kg	4	<4	7	<5	7	N/A	N/A	N/A
Cadmium	mg/kg	0.4	<0.4	<0.4	<1	N/A	N/A	N/A	N/A
Chromium	mg/kg	1	20	15	9	18	28.6%	15	75.9%
Copper	mg/kg	1	14	14	11	14	0.0%	13	24.0%
Lead	mg/kg	1	18	14	12	16	25.0%	15	40.0%
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Nickel	mg/kg	1	16	10	7	13	46.2%	12	78.3%
Zinc	mg/kg	1	66	36	22	51	58.8%	44	100.0%
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1		N/A	N/A	N/A	N/A
Asbestos ID in soil <0.1g/kg*	-	N/A	No visible asbestos detected	No visible asbestos detected	sible asbestos det	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	g	--	–	–	<0.01	N/A	N/A	N/A	N/A
FA and AF Estimation*	g	--	–	–		N/A	N/A	N/A	N/A
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A

Table T4: Soil QA/QC Results (Blanks and Trip Spikes)

		Sample Type	Trip Blank	Trip Spike
		Sample	TB	TS
		Laboratory Report	249069	249069
		Date Sampled	13.08.20	13.08.20
	Units	PQL		
TRH C6 - C9	mg/kg	25	<25	-
TRH C6 - C10	mg/kg	25	<25	-
vTPH C6 - C10 lessBTEX (F1)	mg/kg	25	<25	-
Benzene	mg/kg	0.2	<0.2	103%
Toluene	mg/kg	0.5	<0.5	101%
Ethylbenzene	mg/kg	1	<1	110%
m+p-xylene	mg/kg	2	<2	110%
o-Xylene	mg/kg	1	<1	110%
naphthalene	mg/kg	1	<1	-
Total +ve Xylenes	mg/kg	3	<3	-

Table T5: Soil QA/QC Results (Rinsate)

		Sample	RB1
		Sample Type	Rinsate
		Laboratory Report	Envirolab
		Laboratory	249069
		Date Sampled	13.08.20
	Units	PQL	
TRH C6 - C9	µg/L	10	<10
TRH C6 - C10	µg/L	10	<10
vTPH C6 - C10 lessBTEX (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
TRH C10 - C14	µg/L	50	<50
TRH C15 - C28	µg/L	100	<100
TRH C29 - C36	µg/L	100	<100
TRH >C10-C16	µg/L	50	<50
TRH >C10 - C16less Naphthalene (F2)	µg/L	50	<50
TRH >C16-C34	µg/L	100	<100
TRH >C34-C40	µg/L	100	<100
Naphthalene	µg/L	1	<1
Acenaphthylene	µg/L	1	<1
Acenaphthene	µg/L	1	<1
Fluorene	µg/L	1	<1
Phenanthrene	µg/L	1	<1
Anthracene	µg/L	1	<1
Fluoranthene	µg/L	1	<1
Pyrene	µg/L	1	<1
Benzo(a)anthracene	µg/L	1	<1
Chrysene	µg/L	1	<1
Benzo(b,j+k)fluoranthene	µg/L	1	<2
Benzo(a)pyrene	µg/L	1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1
Dibenzo(a,h)anthracene	µg/L	1	<1
Benzo(g,h,i)perylene	µg/L	1	<1
Total +vePAH's	µg/L	0.1	NIL (+)VE
Benzo(a)pyrene TEQ calc(PQL)	µg/L	5	<5
Arsenic	µg/L	1	<1
Cadmium	µg/L	0.1	<0.1
Chromium	µg/L	1	<1
Copper	µg/L	1	<1
Lead	µg/L	1	<1
Mercury	µg/L	0.05	<0.05
Nickel	µg/L	1	<1
Zinc	µg/L	1	1

Table T6: Groundwater Field Parameter Measurement and Observation Results

Well ID	Date	SWL	Total Depth	pH	EC	DO	Eh	Temp	Observations
		m BTOC	m BTOC		µS/cm	mg/L	mV	°C	
GW1	21/08/2020	5.17	9.06	5.85	26,411.00	0.34	-86.1	20.0	Slightly cloudy light brown, low turbidity, no odour, no sheen.
GW2	21/08/2020	3.47	9.04	6.51	20,351	0.42	82	20.0	Light brown, low turbidity, no odour no sheen.
GW3	21/08/2020	4.17	9.06	6.50	11,641	3.59	140	18.9	Slightly cloudy light brown, low turbidity, no odour, no sheen.

* indicates additional purging and sampling conducted on AEC03_MW05
m BTOC: metres below top of casing
SWL: Standing water level
EC: Electrical conductivity
DO: Dissolved oxygen
Eh: Redox potential
Temp: Temperature
µS/cm: Micro siemens per centimetre
mg/L: milligram per litre
mV: millivolts
°C: Degrees Celsius

Table T7: Summary of Groundwater Results and Comparison to Adopted Screening Criteria

	NEPM (2013) HSL Low - High Density Residential, Clay, 2 m to <4 m	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Fresh water, 95% species protection)	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Marine water, 95% species protection)		Lab Report	249512	249512	249512
					Project Number	CES161003-HC	CES161003-HC	CES161003-HC
					Sample	GW1	GW2	GW3
					Date Sampled	24/08/2020	24/08/2020	24/08/2020
				Units	PQL			
TRH C6 - C9	-	-	-	µg/L	10	<10	<10	<10
TRH C6 - C10	-	-	-	µg/L	10	<10	<10	<10
vTPH C6 - C10 lessBTEX (F1)	NL	-	-	µg/L	10	<10	<10	<10
Benzene	5	950	500	µg/L	1	<1	<1	<1
Toluene	NL	180	180	µg/L	1	<1	<1	<1
Ethylbenzene	NL	80	80	µg/L	1	<1	<1	<1
m+p-xylene	NL	75	75	µg/L	2	<2	<2	<2
o-Xylene	NL	350		µg/L	1	<1	<1	<1
naphthalene	NL	16	16	µg/L	1	<1	<1	<1
TRH C10 - C14	-	-	-	µg/L	50	<50	<50	<50
TRH C15 - C28	-	-	-	µg/L	100	<100	<100	<100
TRH C29 - C36	-	-	-	µg/L	100	<100	<100	<100
TRH >C10-C16	-	-	-	µg/L	50	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	NL	-	-	µg/L	50	<50	<50	<50
TRH >C16-C34	-	-	-	µg/L	100	<100	<100	<100
TRH >C34-C40	-	-	-	µg/L	100	<100	<100	<100
Naphthalene	NL	16	50	µg/L	0.2	<0.2	<0.2	<0.2
Acenaphthylene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	-	0.6	0.6	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	-	0.01	0.01	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	-	1	1	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	-	-	-	µg/L	0.1	<0.2	<0.2	<0.2
Benzo(a)pyrene	-	0.1	0.1	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Total +vePAH's	-	-	-	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc(PQL)	-	-	-	µg/L	0.5	<0.5	<0.5	<0.5
Arsenic	-	13	-	µg/L	1	<1	<1	1
Cadmium	-	0.2	0.7	µg/L	0.1	<0.1	0.3	<0.1
Chromium	-	1	4.4	µg/L	1	<1	<1	<1
Copper	-	1.4	1.3	µg/L	1	34	29	4
Lead	-	3.4	4.4	µg/L	1	<1	1	<1
Mercury	-	0.06	0.1	µg/L	0.05	<0.05	<0.05	<0.05
Nickel	-	11	7	µg/L	1	170	6	3
Zinc	-	8	15	µg/L	1	87	60	5

Exceeds Freshwater Criteria
Exceeds Marine water Criteria
Exceeds both Fresh and Marine Water

Table T8: Groundwater QAQC Assessment Results

			249512	249512	ES2029723				
			CES161003-HC	CES161003-HC	CES161003-HC	**Average**	**Blind RPD**	**Average**	**Split RPD**
		Sample	GW3	QW1	QW1A				
		Date Sampled	24/08/2020				**%**		**%**
	Units	PQL							
TRH C6 - C9	µg/L	10.00	<10	<10	<20	N/A	N/A	N/A	N/A
TRH C6 - C10	µg/L	10.00	<10	<10	<20	N/A	N/A	N/A	N/A
vTPH C6 - C10 lessBTEX (F1)	µg/L	10.00	<10	<10	<20	N/A	N/A	N/A	N/A
Benzene	µg/L	1.00	<1	<1	<1	N/A	N/A	N/A	N/A
Toluene	µg/L	1.00	<1	<1	<2	N/A	N/A	N/A	N/A
Ethylbenzene	µg/L	1.00	<1	<1	<2	N/A	N/A	N/A	N/A
m+p-xylene	µg/L	2.00	<2	<2	<2	N/A	N/A	N/A	N/A
o-Xylene	µg/L	1.00	<1	<1	<2	N/A	N/A	N/A	N/A
naphthalene	µg/L	1.00	<1	<1	<5	N/A	N/A	N/A	N/A
TRH C10 - C14	µg/L	50	<50	<50	<50	N/A	N/A	N/A	N/A
TRH C15 - C28	µg/L	100	<100	<100	<100	N/A	N/A	N/A	N/A
TRH C29 - C36	µg/L	100	<100	<100	<50	N/A	N/A	N/A	N/A
TRH >C10-C16	µg/L	50	<50	<50	<100	N/A	N/A	N/A	N/A
TRH >C10 - C16less Naphthalene (F2)	µg/L	50	<50	<50	<100	N/A	N/A	N/A	N/A
TRH >C16-C34	µg/L	100	<100	<100	<100	N/A	N/A	N/A	N/A
TRH >C34-C40	µg/L	100	<100	<100	<100	N/A	N/A	N/A	N/A
Naphthalene	µg/L	0.2	<0.2	<0.2	<0.1	N/A	N/A	N/A	N/A
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2	<0.2	<0.1	N/A	N/A	N/A	N/A
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Arsenic	µg/L	1.00	1	2	2	2	66.7%	2	66.7%
Cadmium	µg/L	0.10	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Chromium	µg/L	1.00	<1	<1	<1	N/A	N/A	N/A	N/A
Copper	µg/L	1.00	4	21	8	13	136.0%	6	66.7%
Lead	µg/L	1.00	<1	<1	<1	N/A	N/A	N/A	N/A
Mercury	µg/L	0.05	<0.05	<0.05	<0.1	N/A	N/A	N/A	N/A
Nickel	µg/L	1.00	3	5	4	4	50.0%	4	28.6%
Zinc	µg/L	1.00	5	29	15	17	141.2%	10	100.0%

Table T9: Groundwater QA/QC Results (Blanks and Trip Spikes)

		Sample Type	Trip Blank	Trip Spike
		Sample	TB	TS
		Laboratory Report	249512	249512
		Date Sampled	21.08.2020	21.08.2020
	Units	PQL		
TRH C6 - C9	µg/L	10	<10	-
TRH C6 - C10	µg/L	10	<10	-
vTPH C6 - C10 lessBTEX (F1)	µg/L	10	<10	-
Benzene	µg/L	1	<1	115%
Toluene	µg/L	1	<1	103%
Ethylbenzene	µg/L	1	<1	93%
m+p-xylene	µg/L	2	<2	103%
o-Xylene	µg/L	1	<1	102%
naphthalene	µg/L	1	<1	103%

Table T10: Groundwater QA/QC Results (Rinsate)

		Sample	RB2
		Sample Type	Rinsate
		Laboratory Report	Envirolab
		Laboratory	249512
		Date Sampled	21.08.20
	Units	PQL	
TRH C6 - C9	µg/L	10	<10
TRH C6 - C10	µg/L	10	<10
vTPH C6 - C10 lessBTEX (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
TRH C10 - C14	µg/L	50	<50
TRH C15 - C28	µg/L	100	<100
TRH C29 - C36	µg/L	100	<100
TRH >C10-C16	µg/L	50	<50
TRH >C10 - C16less Naphthalene (F2)	µg/L	50	<50
TRH >C16-C34	µg/L	100	<100
TRH >C34-C40	µg/L	100	<100
Naphthalene	µg/L	1	<1
Acenaphthylene	µg/L	1	<1
Acenaphthene	µg/L	1	<1
Fluorene	µg/L	1	<1
Phenanthrene	µg/L	1	<1
Anthracene	µg/L	1	<1
Fluoranthene	µg/L	1	<1
Pyrene	µg/L	1	<1
Benzo(a)anthracene	µg/L	1	<1
Chrysene	µg/L	1	<1
Benzo(b,j+k)fluoranthene	µg/L	1	<2
Benzo(a)pyrene	µg/L	1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1
Dibenzo(a,h)anthracene	µg/L	1	<1
Benzo(g,h,i)perylene	µg/L	1	<1
Total +vePAH's	µg/L	0.1	NIL (+)VE
Benzo(a)pyrene TEQ calc(PQL)	µg/L	5	<5
Arsenic	µg/L	1	<1
Cadmium	µg/L	0.1	<0.1
Chromium	µg/L	1	<1
Copper	µg/L	1	<1
Lead	µg/L	1	<1
Mercury	µg/L	0.05	<0.05
Nickel	µg/L	1	<1
Zinc	µg/L	1	1

Table T11: EIL Soil Physiochemical Properties

Sample			SB7/0.5
Depth			0.5
Date Sampled	Units	PQL	13/08/2020
Iron	mg/kg	10	29000
pH 1:5 soil:CaCl2	pH Units	0.1	5.4
Total Organic Carbon(Walkley Black)	mg/kg	1000	9500
Exchangeable Ca	meq/100g	0.1	2.9
Exchangeable K	meq/100g	0.1	0.2
Exchangeable Mg	meq/100g	0.1	4.2
Exchangeable Na	meq/100g	0.1	0.8
Cation Exchange Capacity	meq/100g	1	8.1
Clay in soils <2µm	% (w/w)	1	13

Appendix A

Photographic Log

Photograph 1 – SB1 Lithology.

Photograph 2 – SB2 Lithology.

Photograph 3 – SB3 Lithology.

Photograph 4 – SB4 Lithology.

Photograph 5 – SB5 Lithology.

Photograph 6 – SB6 Lithology.

Photograph 7 – SB7 Lithology.

Photograph 8 – SB8 Lithology.

Photograph 9 – SB9 Lithology.

Photograph 10 – SB10 Lithology.

Photograph 11 – SB13 Lithology.

Appendix B

Calibration Certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-115200**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Post sampling results

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

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		92ppm Isobutylene	NATA	SY245		90.5ppm

Calibrated by: Kylie Rawlings

Calibration date: **11/08/2020**

Next calibration due: **10/09/2020**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 12D100012

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		352607	pH 9.56
2. pH 7.00		pH 7.00		330737	pH 6.93
3. pH 4.00		pH 4.00		347027	pH 4.17
4. mV		229.6mV		351758/357173	229.6mV
5. EC		2.76mS		343511	2.76mS
6. D.O		0.00ppm		1904288592	0.00ppm
7. Temp		22°C		MultiTherm	20.8°C

Calibrated by: Sarah Lian

Calibration date: 19/08/2020

Next calibration due: 19/09/2020

Oil / Water Interface Meter

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **Geotech Interface Meter (30M)**
Serial No. **4019**

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

Certificate of Calibration

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

Calibrated by: **Chris Edwards**

Calibration date: **19-Aug-20**

Next calibration due: **18-Oct-20**

Appendix C

Borehole Logs

Project ID: CES161003-HC **Easting:** 305665

Project: Detailed Site Investigation **Northing:** 6241658

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB1**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Sandy CLAY, medium plasticity, brown/grey, with trace fine sand, moist.	SB1, QS1 and QS1A			
0.5				FILL: CLAY, medium plasticity, red/brown/grey, dry.				
1.0	Push Tube							
1.5								
2.0								
2.5				CLAY: medium plasticty, grey/yellow, trace extremely weathered Shale and Shale fragments, dry.				
3.0					SB1/3			
3.5				**End of hole at 3.3 m. Target depth. Auger refusal.**				

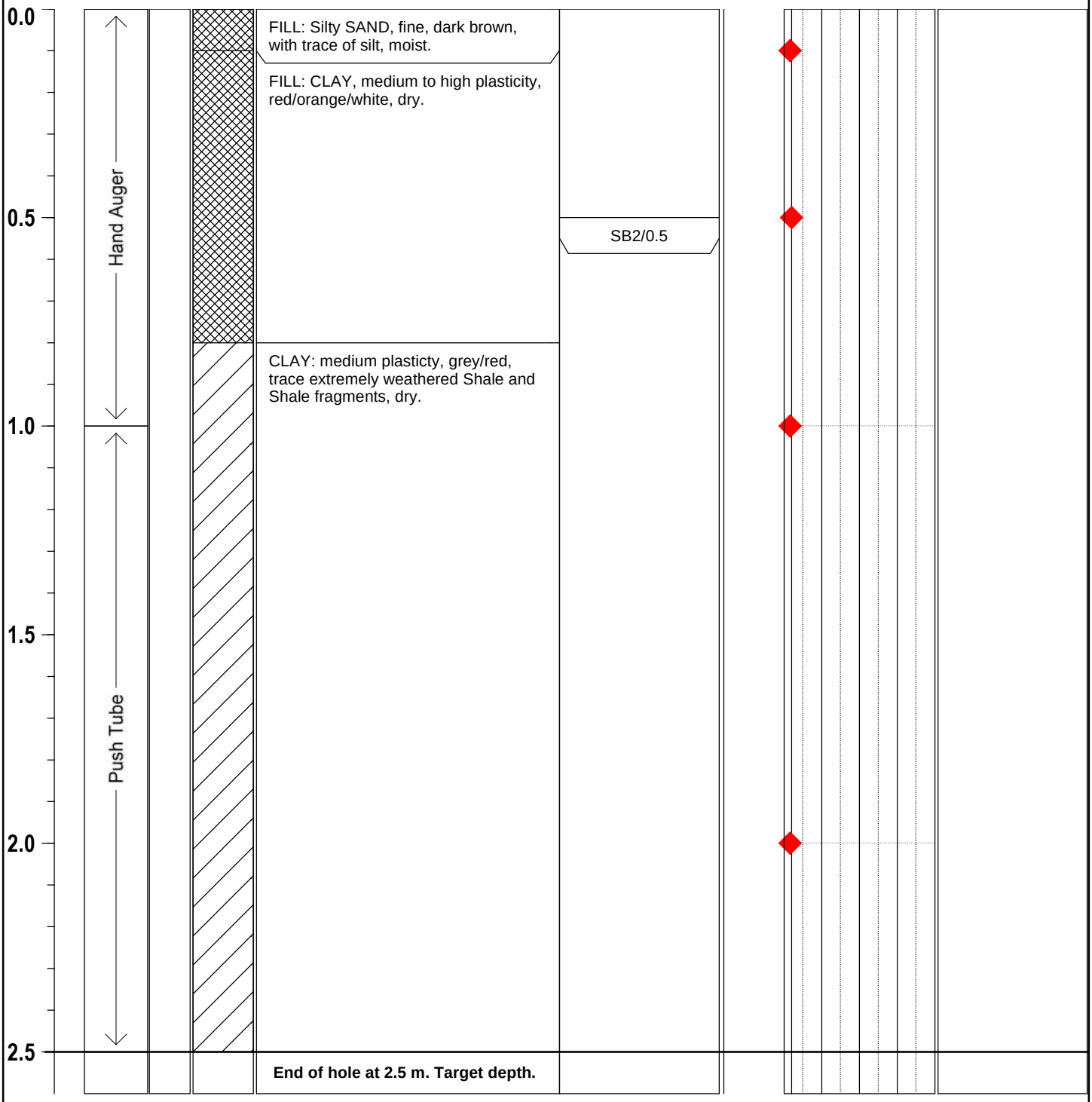
Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID:	CES161003-HC	**Easting:**	305644
Project:	Detailed Site Investigation	**Northing:**	6241661
Client:	Centurion Project Management	**Elevation:**	
Location:	SummitCare, Randwick Close	**Environmental Log:**	**SB2**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582



Drill Company:	Epoca Environmental Pty Ltd	**Date Commenced:**	13/08/2020
Drill Model:	Geoprobe 7822DTGeoprobe 7822DT	**Date Completed:**	13/08/2020
Hole Diameter (mm):	50 mm	**Logged/checked by:**	AC/MC

Project ID: CES161003-HC **Easting:** 305622

Project: Detailed Site Investigation **Northing:** 6241662

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: SB3

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty SAND, fine, dark brown/orange, with trace of silt and clay, moist.				
				FILL: Sandy CLAY, medium plasticity, grey/brown/white, trace fine sand, dry.				
0.5					SB3/0.5			
				CLAY: medium plasticty, grey/red, trace fine sand, extremely weathered Shale and Shale fragments, trace charocal and organic materials, dry.				
1.0	Push Tube							
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID:	CES161003-HC	**Easting:**	305593
Project:	Detailed Site Investigation	**Northing:**	6241691
Client:	Centurion Project Management	**Elevation:**	
Location:	SummitCare, Randwick Close	**Environmental Log:**	**SB4**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sand GRAVEL, fine to medium gravel, dark brown, with trace of silt and sand, moist.	SB4/0.1			
0.5	Push Tube			CLAY: medium plasticity, light grey, trace ironstone gravels, dry.				
1.0								
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company:	Epoca Environmental Pty Ltd	**Date Commenced:**	13/08/2020
Drill Model:	Geoprobe 7822DTGeoprobe 7822DT	**Date Completed:**	13/08/2020
Hole Diameter (mm):	50 mm	**Logged/checked by:**	AC/MC

Project ID: CES161003-HC **Easting:** 305624

Project: Detailed Site Investigation **Northing:** 6241686

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB5**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sandy GRAVEL, fine to medium gravel, dark brown, with trace of silt and sand, moist.				
					SB5/0.1			
0.5				CLAY: medium plasticity, light grey mottled red, moist				
1.0	Push Tube							
1.5				**End of hole at 1.4 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID: CES161003-HC **Easting:** 305647

Project: Detailed Site Investigation **Northing:** 6241683

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB6**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sandy GRAVEL, fine to medium gravel, dark brown, with trace fine sand, moist.	SB6/0.1			
0.5				FILL: Sandy CLAY, low plasticity, light grey mottled red, trace fine sand and organic material, moist.	SB6/0.5			
1.0	Push Tube			CLAY: medium plasticity, grey mottled orange, moist.				
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID: CES161003-HC **Easting:** 305650

Project: Detailed Site Investigation **Northing:** 6241715

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB7**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Sandy CLAY, high plasticity, brown/grey/orange, trace fine sand, moist.				
				FILL: Gravelly SAND, fine to medium, dark brown, moist.	SB7/0.5			
				CLAY: medium plasticity, grey mottled orange, moist.				
1.0	Push Tube				SB7/1			
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID: CES161003-HC **Easting:** 305669

Project: Detailed Site Investigation **Northing:** 6241731

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB8**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Sandy CLAY, high plasticity, brown/red, trace fine sand and brick fragments, moist.				
0.5				FILL: Sandy CLAY, medium plasticity, grey/brown, trace fine sand, dry.	SB8/0.5			
1.0	Push Tube			CLAY: medium plasticity, grey mottled orange, dry.				
1.5				CLAY: trace extremely weathered shale and shale fragments.				
2.0								
2.5				**End of hole at 2.7 m. Target depth.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID:	CES161003-HC	**Easting:**	305652
Project:	Detailed Site Investigation	**Northing:**	6241732
Client:	Centurion Project Management	**Elevation:**	
Location:	SummitCare, Randwick Close	**Environmental Log:**	**SB9**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Sandy CLAY, high plasticity, brown/dark brown/grey, trace fine sand, moist.	SB9/0.1			
0.5				CLAY: medium plasticity, grey/orange, dry.	SB9/0.5			
1.0	Push Tube							
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company:	Epoca Environmental Pty Ltd	**Date Commenced:**	13/08/2020
Drill Model:	Geoprobe 7822DTGeoprobe 7822DT	**Date Completed:**	13/08/2020
Hole Diameter (mm):	50 mm	**Logged/checked by:**	AC/MC

Project ID: CES161003-HC **Easting:** 305627

Project: Detailed Site Investigation **Northing:** 6241731

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: SB10

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Sandy CLAY, medium plasticity, brown/dark grey, trace fine sand and organic material, moist.	SB10/0.1			
0.5	Push Tube			CLAY: medium plasticity, grey/orange, dry.				
1.0								
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID: CES161003-HC **Easting:** 305596

Project: Detailed Site Investigation **Northing:** 6241741

Client: Centurion Project Management **Elevation:**

Location: SummitCare, Randwick Close **Environmental Log:** **SB11**

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sandy GRAVEL, fine to medium grained, dark brown/grey, trace fine sand, moist.	SB11/0.1			
0.5	Push Tube			CLAY: medium plasticity, grey/orange, trace ironstone gravel, dry.				
1.0					SB11/1			
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd **Date Commenced:** 13/08/2020

Drill Model: Geoprobe 7822DTGeoprobe 7822DT **Date Completed:** 13/08/2020

Hole Diameter (mm): 50 mm **Logged/checked by:** AC/MC

Project ID: CES161003-HC
Project: Detailed Site Investigation
Client: Centurion Project Management
Location: SummitCare, Randwick Close

Easting: 305572
Northing: 6241753
Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: **SB12**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sandy GRAVEL, fine to medium grained, dark brown/grey, trace fine sand, moist.				
				FILL: Silty SAND, fine to medium grained, black, trace organic material, moist.				
0.5					SB12/0.5			
	Push Tube	▼		CLAY: medium plasticity, grey/orange, wet.				
1.0								
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd
Drill Model: Geoprobe 7822DTGeoprobe 7822DT
Hole Diameter (mm): 50 mm

Date Commenced: 13/08/2020
Date Completed: 13/08/2020
Logged/checked by: AC/MC

Project ID: CES161003-HC
Project: Detailed Site Investigation
Client: Centurion Project Management
Location: SummitCare, Randwick Close

Easting: 305627
Northing: 6241756
Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: **SB13**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 2.5 5.0 7.5	
0.0	Hand Auger			FILL: Silty Sandy GRAVEL, fine to medium grained, dark brown/grey, trace fine sand, moist.				
				FILL: Sandy CLAY, meidum plasticity, dark brown/orange, trace gravel, moist.				
0.5					SB13/0.5			
				Sandy CLAY: medium plasticity, grey/orange, trace ironstone gravel, moist.				
1.0	Push Tube			Sandy CLAY: becoming wet at 1m.				
1.5				**End of hole at 1.5 m. Target depth. Auger refusal.**				

Drill Company: Epoca Environmental Pty Ltd
Drill Model: Geoprobe 7822DTGeoprobe 7822DT
Hole Diameter (mm): 50 mm

Date Commenced: 13/08/2020
Date Completed: 13/08/2020
Logged/checked by: AC/MC

Appendix D

Field Data Sheets

X: 305665
Y: 6241658

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

Borehole No: SB1

Sheet of

CLIENT: Centurion group
PROJECT: ~~Casula~~ RANDWICK CLOSE, CASULA
LOCATION: SB1
DRILL CONTRACTOR: EPOCA
JOB NUMBER: CES 160201 – HL
DATE COMMENCED: 13/8/20
DATE COMPLETED: 13/8/20
LOGGED BY: AC

Drill Model: — Hole Angle: — deg. Bore Size: — RL: —
Drilling Fluid: — Orientation: — deg. Co-ords: —

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			0.1 Fill sandy clay: mod plast, brown/grey. 0.3	M		0.8		0.1/QS1/QS1A	
	.5			Fill clay: mod plast red mottl. brown grey (ironstones) 2.3	D		0.7 / 0.5 / 0.6		0.5 / 1.0 / 2.0	
	.0									
	.5			Nat clay mod plast. Grey to yellow	D					
	.0			to grey ~ weathered shale @ 3.1 shale.	D		0.3		3.0	
	.5			Shale @ 3.3						
	.0			HA → 1.0						
	.5			PT → 3.3						
				ref. @ 3.3						
	.0									
	.5									
	.0									

SB1/0.1
SB1/3.0

Produced By: ____________
Checked By: ____________

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

X: 305644
Y: 6144661

Borehole No: SB2

Sheet of

CLIENT: Centrex Group
PROJECT:
LOCATION: ~~CASUA~~ SB2
DRILL CONTRACTOR: EDOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0									
			Fill	Silty SAND: f grained dark Brown. 0.1	M		0.4		0.1	
	.5		Fill	CLAY: high plast. red mott! orange & white	D		0.5		0.5	
				c. inclusions						
	.0			OP						
				Nat CLAY: med plas ~~ex residual~~ red to Grey	D		0.4		1.0	
	.5				D		0.4		2.0	
	.0			Sheen @ 2.5						
	.5									
	.0			HA → 1.0						
	.5			PT → 2.5 refusal						
	.0									
	.5									
	.0									

Produced By: _____
Checked By: _____

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

X: 305622
Y: 6141662

Borehole No: SB3
Sheet of

CLIENT:	JOB NUMBER:
PROJECT:	DATE COMMENCED:
LOCATION: SB3	DATE COMPLETED:
DRILL CONTRACTOR:	LOGGED BY: RC
Drill Model:	Hole Angle: deg. Bore Size: RL:
Drilling Fluid:	Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			Fill silty SAND: fine grained, w. clay. dark brown / orange	M		0.4	0.1		
	.5			0.2						
				Fill clayey sandy CLAY: mod. plast, brown, white, grey.	D		0.7	0.5		
	.0			0.7						
	.5			Natural Clay Grey mod - plast (minor sand) minor charcoal dry - moist.	D		0.6	1.0		
	.0			weathered shale						
				shale @ 1.5.						
	.5									
	.0			HA → 1.0						
	.5			PT → 1.5						
	.0									
	.5									
	.0									
	.5									
	.0									

Produced By: _____
Checked By: _____

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305593
y: 6241691

Borehole No: SB4
Sheet of

CLIENT:
PROJECT:
LOCATION: SB4
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model:
Drilling Fluid:
Hole Angle:
Orientation:
deg.
deg.
Bore Size:
Co-ords:
RL:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	0			Fill: silty ~~sandy~~ gravel: f. grained dark brown (road base) 0.3	M		0.7		0.1	
	0.5			Not Clay med plast ~~brown~~ 0.5.	D		0.6		0.5	
	1.0			~ minor ironstone gravels	D		0.9		1.0	
	1.5			EOH @ 1.5m						
	2.0			HA ~~PT~~ → 0-0.5m						
	2.5			PT → 0.5 → 1.5						
	3.0									
	3.5									
	4.0									
	4.5									
	5.0									

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305614
y: 6241686

Borehole No: SB5
Sheet of

CLIENT:
PROJECT:
LOCATION: SB5
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			Fill: silty sandy gravel f-m grained dark brown (road base	W		1.4		0.1	
	.5			0.3						
				Nat: Clay med plast. light brn mott. red	W		0.7		0.5	
	.0						0.6		1.0	
	.5			EOH @ 1.4 since E ~ 1.4						
	.0									
	.5			0.8						
	.0			HA → ~~RB~~						
				DT → 1.4						
	.5									
	.0			water @ bottom of hole						
	.5									
	.0									

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305647
y: 6241683

Borehole No: SB6
Sheet of

CLIENT:
PROJECT:
LOCATION: SB6
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	Field Records/Comments: PID/ Explosimeter	Sample Interval	Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0		F	silty sandy gravel: v. m. clay. f-sand. dark brown			1.3	0.1		
	.5			0.4						
			Fill	sandy CLAY: low plast; minor gravels v. organic material			0.8	0.5		
	.0			0.9						
	.5		Nat	CLAY: med. plast. grey mottled orange			0.7	1.0		
	.0			EOH @ 1.5						
	.5			HA → 0.9						
	.0			PT → 1.5						
	.5									
	.0									
	.5									
	.0									

Produced By:
Checked By:

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305650
y: 6041715

Borehole No: SB7
Sheet of

CLIENT:
PROJECT:
LOCATION: SB7
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description (TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium))	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments (Sample ID, insitu testing, groundwater observations/regime, additional information)	Well construction details
	.0									
				sandy clay: high plast Brown/grey/orange.	M		1.2		0.1/QS2/QS2A	
	.5			0.4						
				Gravelly SAND: dark brown	W		1.3		0.5	
	.0			0.8						
				Nat Clay med plast Grey mott orange			1.0		1.0	
	.5									
	.0			EOH @ 1.5						
	.5			HA → 0.9						
	.0			PT → 1.5						
	.5									
	.0									
	.5									
	.0									

Produced By: _____
Checked By: _____

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305669
y: 6241731

Borehole No: SB8

Sheet of

CLIENT:	JOB NUMBER:
PROJECT:	DATE COMMENCED:
LOCATION: SB8	DATE COMPLETED:
DRILL CONTRACTOR: EPOCA	LOGGED BY: AC
Drill Model:	Hole Angle: deg. Bore Size: RL:
Drilling Fluid:	Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour, secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, Insitu testing, groundwater observations/regime, additional information	Well construction details
	0			Fill: sandy CLAY. w. minor gravels FM = brick brown/red	M		1.3	0.1		
	0.5			0.5						
				Fill: sandy CLAY med plast. grey brown, beige	D		1.3	0.5		
	1.0			0.9						
				Nat: CLAY med plast, grey/orange			1.2	1.0		
	1.5			w. interbedded gravels @ 1.5 & 2.2.			1.0	2.0		
	2.0			EOH @ 2.7						
				HA → 0.7						
	2.5			PT → 2.7						

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

x: 305652
y: 6241732

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

Borehole No: SB9

Sheet of

CLIENT:	JOB NUMBER:
PROJECT:	DATE COMMENCED:
LOCATION: SB9	DATE COMPLETED:
DRILL CONTRACTOR: EPOCA	LOGGED BY: AL

Drill Model:	Hole Angle:	deg.	Bore Size:	RL:
Drilling Fluid:	Orientation:	deg.	Co-ords:	

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			Fill: ~~sand~~ sandy CLAY f-grained, grey brown	M		1.2		0.1	
	.5			0.4						
				dark brown	D		1.6		0.5	
	.0			0.8						
	.5			Nat CLAY grey mott. orange mod plast	D		0.9		1.5	
	.0			EOH @ 1.5						
	.5									
	.0			Had to creak another hole as refusal @0.8 on first.						
	.5			HA → 0.9 PT → 1.5						
	.0									
	.5									
	.0									

Produced By: ____________
Checked By: ____________

x: 305627
y: 6241731

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

Borehole No: SB10

Sheet of

CLIENT:	**JOB NUMBER:**
PROJECT:	**DATE COMMENCED:**
LOCATION: SB10	**DATE COMPLETED:**
DRILL CONTRACTOR: EPOCA	**LOGGED BY:** AC

Drill Model:	Hole Angle:	deg.	Bore Size:	RL:	
Drilling Fluid:	Orientation:	deg.	Co-ords:		

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			Fill: sandy CLAY: ~~[illegible]~~ mod plast dark grey/brown organic material 0.5	M		1.3		0.1	
	.5			~~Fill~~ Nat CLAY: mod plast Orange. with ironstone gravel lenses @1.0	D		1.2		0.5	
	.0									
	.5				D		0.9		1.0	
	.0			EOH @ 1.5						
	.5			HA → 0.3						
	.0			PT → 1.5						
	.5									
	.0									
	.5									
	.0									

Produced By: ____________

Checked By: ____________

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

x: 305596
y: 6241741

Borehole No: SB11
Sheet of

CLIENT:
PROJECT:
LOCATION: SB11
DRILL CONTRACTOR: EPCOR

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model:
Drilling Fluid:
Hole Angle:
Orientation:
deg.
deg.
Bore Size:
Co-ords:
RL:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	Field Records/Comments: PID/ Exposimeter	Sample Interval	Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			Fill: silty sandy gravel dark brown/grey	M		1.1		0.1	
	.5			0.4						
	.0			Nat CLAY mod plast orange. with ironstone gravel			1.0		0.5	
	.5			grey clay. low plast			0.8		1.0	
	.0			EOH @ 1.5						
	.5			PA → 0.5						
	.0			PT → 1.5						
	.5									
	.0									
	.5									
	.0									

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

X: 320572
Y: 6241753

Borehole No: SB12

Sheet of

CLIENT:
PROJECT:
LOCATION: SB12
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			FILL: silty sandy gravel dark brown/grey	M		1.1		0.1	
	.5			0.3						
	.0			FILL: silty SAND. black f-m-grained. minor sand matrix &	W		1.3		0.5	
	.5			Nat CLAY: mod plast. grey/mott. orange	W		1.1		1.0	
	.0									
	.5			EOH @ 1.5						
	.0								water @ 0.8 m.	
	.5			HA → 0.6						
	.0			PT → 1.5						
	.5									
	.0									

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

BOREHOLE LOG

X: 305627
Y: 6247156

Borehole No: SB13
Sheet of

CLIENT:
PROJECT:
LOCATION: SB13
DRILL CONTRACTOR: EPOCA

JOB NUMBER:
DATE COMMENCED:
DATE COMPLETED:
LOGGED BY: AC

Drill Model: Hole Angle: deg. Bore Size: RL:
Drilling Fluid: Orientation: deg. Co-ords:

Method/ Casing	Depth (m)	Penetration (S, M, H, R)	USCS Classification	Material Description: TYPE; plasticity / particle size, colour; secondary / minor components; moisture; consistency / density; additional observations; geologic origin (eg, fill, residual, alluvium)	Moisture/SWL	Consistency	PID/ Explosimeter	Sample Interval	Field Records/Comments: Sample ID, insitu testing, groundwater observations/regime, additional information	Well construction details
	.0			FILL silty sand gravel dark grey	M		1.1		0.1	
	.5			0.3						
				FILL: sandy CLAY w. gravels dark brown orange	D		1.1		0.5	
	.0			0.6						
	.5			Nat sandy CLAY mod. plast. w. sandstone gravel	W		0.8		1.0 water @ 1.0	
	.0									
	.5			EOH @ 1.5m						
	.0			HA → 0.7						
	.5			PT → 1.5						
	.0									
	.5									
	.0									

Produced By: _____
Checked By: _____

REFER TO WORK INSTRUCTION GRP-FWW005

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client: Centurion Group	**CES Project Code:** CES161003-HL
Project: RANDWICK CLOSE, CASULA	**Location:** CASULA
Sampler (s): AC **Signature(s):**	**Project Manager:** A CHARLES
BH ID: GW1	**Sample ID:** GW1
Purging Date: 21/8/20	**Sampling Date:** 21/8/20

Well Status

Well damaged:	YES/(NO)	Well locked:	YES/(NO)
Cement footing damaged:	YES/(NO)	Cap on PVC casing:	(YES)/NO
Internal obstructions in casing:	YES/(NO)	Well ID visible:	YES/(NO)
Standing water, vegetation around monument:	YES/(NO)	Monument damaged:	YES/(NO)
Water between PVC and protective casing:	YES/(NO)	Odours from groundwater	YES/(NO)
Comments: Total 9.06	YES/(NO)		

Weather Conditions

Standing Water Level (SWL): 5.17 (mBTOC) Temperature: 14 °C

~~Well volume:~~ (L)

~~Water level after purging:~~ (mBTOC) (Clear) Partly Cloudy Overcast

~~Water level at time of sampling:~~ (mBTOC)

~~Volume of water purged:~~ (L) (Calm) Slight breeze Moderate Breeze

Purging equipment: (per) Pump / micro-Purging / Bailer / Foot Valve Windy

Sampling equipment: (per) Pump / Bailer (Fine) Showers Rain

Purging Details

Elapsed time (min)	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Comments	DTW
902	0	1.28	25846	5.90	78.1	20.2	slightly cloudy, light brown, low turb, no odour	5.29
3	0.5	0.39	26490	5.85	-23.6	20.1	" "	5.33
6	9.0	0.39	26535	5.84	-43.4	20.1	" "	5.36
9	1.5	0.32	26501	5.81	-68.1	20.1	" "	5.40
13	2.0	0.32	26486	5.84	-81.7	20.0	" "	5.43
16	2.5	0.34	26398	5.85	-83.4	20.0	" "	5.45
20	3.0	0.34	26411	5.85	-86.1	20.0	" "	5.49

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**CES Project Code:**
Project:	**Location:** CASURA
Sampler (s): D. CAMPAS **Signature(s):**	**Project Manager:** A CAMPAS
BH ID: GW2	**Sample ID:** GW2
Purging Date: 20/8/20	**Sampling Date:** 21/8/20

Well Status

Well damaged:	YES/NO	Well locked:	YES/NO
Cement footing damaged:	YES/NO	Cap on PVC casing:	YES/NO
Internal obstructions in casing:	YES/NO	Well ID visible:	YES/NO
Standing water, vegetation around monument:	YES/NO	Monument damaged:	YES/NO
Water between PVC and protective casing:	YES/NO	Odours from groundwater	YES/NO
Comments:	YES/NO		

Total 9.04

Standing Water Level (SWL): 3.47 (mBTOC)

~~Well volume:~~ (L)

~~Water level after purging:~~ (mBTOC)

~~Water level at time of sampling:~~ (mBTOC)

~~Volume of water purged:~~ (L)

Purging equipment: Pump / micro-Purging / Bailer / Foot Valve

Sampling equipment: Pump / Bailer

Weather Conditions

Temperature: 13 °C

Clear / Partly Cloudy / Overcast

Calm / Slight breeze / Moderate Breeze

Windy

Fine / Showers / Rain

Purging Details

Elapsed time (min)	Cumulative volume (L)	DO ($mg.L^{-1}$)	EC ($uS.cm^{-1}$)	pH -	Eh mV	Temp. (°C)	Comments	DTW
946	0	1.21	20516	6.58	46.7	20.3	No odour, ~~No~~ Low Turb.	3.54
3	0.5	0.47	20287	6.51	81.1	20.0		3.59
6	1.0	0.46	20296	6.51	81.4	20.0		3.61
9	1.5	0.45	20298	6.51	81.6	20.0		3.63
12	2.0	0.44	20309	6.51	81.9	20.0		3.66
15	2.5	0.42	20351	6.51	82.0	20.0		3.69

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client: Centurion Group	**CES Project Code:** CES161003-HC
Project: RANDWICK CLOSE, CASULA	**Location:** CASULA
Sampler (s): A CARNEY **Signature(s):**	**Project Manager:** A. CARNEY
BH ID: GW3	**Sample ID:** GW3
Purging Date: 21/8/20	**Sampling Date:** 21/8/20

Well Status

Well damaged:	YES/NO	Well locked:	YES/NO
Cement footing damaged:	YES/NO	Cap on PVC casing:	YES/NO
Internal obstructions in casing:	YES/NO	Well ID visible:	YES/NO
Standing water, vegetation around monument:	YES/NO	Monument damaged:	YES/NO
Water between PVC and protective casing:	YES/NO	Odours from groundwater	YES/NO
Comments:	YES/NO		

Total 9.06

Standing Water Level (SWL): 4.17 (mBTOC)

~~Well volume:~~ (L)

~~Water level after purging:~~ (mBTOC)

~~Water level at time of sampling:~~ (mBTOC)

~~Volume of water purged:~~ (L)

Purging equipment: Peri Pump / micro-Purging / Bailer / Foot Valve

Sampling equipment: Peri Pump / Bailer

Weather Conditions

Temperature: 13 °C

Clear Partly Cloudy Overcast

Calm Slight breeze Moderate Breeze Windy

Fine Showers Rain

Purging Details

Elapsed time (min)	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	DTW	Comments
Start 8:13am	0	3.58	13650	6.90	97.4	18.7	4.24	Slightly cloudy, light brown, no odour
3	0.5	3.71	12011	6.56	131.0	18.5	4.27	
6	1	3.63	11790	6.56	133.1	18.5	4.29	
10	1.5	3.63	11701	6.61	139.2	18.8	4.32	
14	2	3.55	11683	6.50	139.9	18.9	4.35	
17	2.5	3.59	11641	6.50	140.0	18.9	4.36	

Groundwater field parameters at the end of purging to be marked "Field Measurements".

QW1 / QW1A TAKEN

Appendix E

Laboratory Certificates of Analysis

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CERTIFICATE OF ANALYSIS 249069

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES161003-HC**
Number of Samples	48 Soil, 1 Water
Date samples received	14/08/2020
Date completed instructions received	14/08/2020

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	21/08/2020
Date of Issue	21/08/2020

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Authorised by Asbestos Approved Signatory: Lucy Zhu

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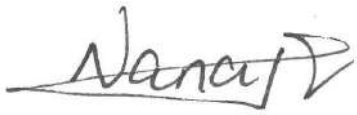
Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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	%	96	96	89	86	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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	%	86	91	99	95	95

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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	%	93	95	95	95	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	19/08/2020	19/08/2020
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	%	90	92	94	96	94

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		249069-44	249069-47	249069-48
Your Reference	UNITS	QS1	TS	TB
Date Sampled		13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020
TRH C_6 - C_9	mg/kg	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	103%	<0.2
Toluene	mg/kg	<0.5	101%	<0.5
Ethylbenzene	mg/kg	<1	110%	<1
m+p-xylene	mg/kg	<2	110%	<2
o-Xylene	mg/kg	<1	110%	<1
naphthalene	mg/kg	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	91	104	104

svTRH (C10-C40) in Soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	81	81	82	80

svTRH (C10-C40) in Soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	79	82	80	82

svTRH (C10-C40) in Soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	82	81	80	80	80

svTRH (C10-C40) in Soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
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-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	79	80	78	80

svTRH (C10-C40) in Soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date extracted	-	18/08/2020
Date analysed	-	18/08/2020
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	%	81

PAHs in Soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	<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	%	109	109	110	110	110

PAHs in Soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	<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	%	110	112	108	111	114

PAHs in Soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	<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	%	112	113	112	113	112

PAHs in Soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	<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	%	114	111	82	73	82

PAHs in Soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date extracted	-	18/08/2020
Date analysed	-	19/08/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	76

Organochlorine Pesticides in soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	99	99	98	100

Organochlorine Pesticides in soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	103	100	102	103

Organochlorine Pesticides in soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	102	103	100	104	105

Organochlorine Pesticides in soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	105	102	81	75	76

Organochlorine Pesticides in soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date extracted	-	18/08/2020
Date analysed	-	19/08/2020
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	%	75

Organophosphorus Pesticides in Soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	99	99	98	100

Organophosphorus Pesticides in Soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	103	100	102	103

Organophosphorus Pesticides in Soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	102	103	100	104	105

Organophosphorus Pesticides in Soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	105	102	81	75	76

Organophosphorus Pesticides in Soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date extracted	-	18/08/2020
Date analysed	-	19/08/2020
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	%	75

PCBs in Soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	99	99	98	100

PCBs in Soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	100	103	100	102	103

PCBs in Soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
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	%	102	103	100	104	105

PCBs in Soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	18/08/2020	18/08/2020	18/08/2020
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	%	105	102	81	75	76

PCBs in Soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date extracted	-	18/08/2020
Date analysed	-	18/08/2020
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	%	75

Acid Extractable metals in soil						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	4	10	5	69
Copper	mg/kg	14	19	14	8	23
Lead	mg/kg	18	4	10	5	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	16	4	6	1	66
Zinc	mg/kg	66	29	29	7	44
Iron	mg/kg	20,000	7,200	24,000	10,000	42,000

Acid Extractable metals in soil						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Arsenic	mg/kg	<4	<4	<4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	19	40	10	8
Copper	mg/kg	10	46	26	9	7
Lead	mg/kg	5	5	6	6	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	25	52	3	5
Zinc	mg/kg	13	46	48	10	13
Iron	mg/kg	9,200	22,000	32,000	21,000	16,000

Acid Extractable metals in soil						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	4	9	4	6	7
Copper	mg/kg	13	9	13	11	7
Lead	mg/kg	4	6	5	6	5
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	1	7	<1	6	6
Zinc	mg/kg	8	24	5	34	32
Iron	mg/kg	9,300	12,000	20,000	19,000	9,600

Acid Extractable metals in soil						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Arsenic	mg/kg	<4	<4	<4	<4	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	11	66	1	8	15
Copper	mg/kg	13	18	11	33	10
Lead	mg/kg	7	4	5	17	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	56	<1	5	4
Zinc	mg/kg	42	29	5	33	14
Iron	mg/kg	20,000	42,000	1,500	22,000	79,000

Acid Extractable metals in soil		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	19/08/2020
Date analysed	-	19/08/2020
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.4
Chromium	mg/kg	15
Copper	mg/kg	14
Lead	mg/kg	14
Mercury	mg/kg	<0.1
Nickel	mg/kg	10
Zinc	mg/kg	36
Iron	mg/kg	27,000

Moisture						
Our Reference		249069-1	249069-5	249069-7	249069-11	249069-13
Your Reference	UNITS	SB1/0.1	SB1/3.0	SB2/0.5	SB3/0.5	SB4/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Moisture	%	21	19	19	20	7.7

Moisture						
Our Reference		249069-15	249069-16	249069-19	249069-20	249069-23
Your Reference	UNITS	SB4/1.0	SB5/0.1	SB6/0.1	SB6/0.5	SB7/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Moisture	%	15	18	12	18	18

Moisture						
Our Reference		249069-24	249069-26	249069-28	249069-29	249069-30
Your Reference	UNITS	SB7/1.0	SB8/0.5	SB8/2.0	SB9/0.1	SB9/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Moisture	%	22	15	18	16	16

Moisture						
Our Reference		249069-32	249069-35	249069-37	249069-39	249069-42
Your Reference	UNITS	SB10/0.1	SB11/0.1	SB11/1.0	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Date analysed	-	19/08/2020	19/08/2020	19/08/2020	19/08/2020	19/08/2020
Moisture	%	23	17	18	22	17

Moisture		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	18/08/2020
Date analysed	-	19/08/2020
Moisture	%	20

Asbestos ID - soils NEPM - ASB-001						
Our Reference	UNITS	249069-1	249069-7	249069-11	249069-13	249069-16
Your Reference		SB1/0.1	SB2/0.5	SB3/0.5	SB4/0.1	SB5/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Sample mass tested	g	581.75	442.37	470.76	693	605.02
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey 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 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	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		249069-19	249069-20	249069-23	249069-26	249069-29
Your Reference	UNITS	SB6/0.1	SB6/0.5	SB7/0.5	SB8/0.5	SB9/0.1
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Sample mass tested	g	592.87	418.57	589.22	450.86	585.96
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey 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	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		249069-30	249069-32	249069-35	249069-39	249069-42
Your Reference	UNITS	SB9/0.5	SB10/0.1	SB11/0.1	SB12/0.5	SB13/0.5
Date Sampled		13/08/2020	13/08/2020	13/08/2020	13/08/2020	13/08/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
Sample mass tested	g	583.37	394.87	555.25	462.86	448.36
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey 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	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001		
Our Reference		249069-44
Your Reference	UNITS	QS1
Date Sampled		13/08/2020
Type of sample		Soil
Date analysed	-	18/08/2020
Sample mass tested	g	619.92
Sample Description	-	Brown clayey soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

vTRH(C6-C10)/BTEXN in Water		
Our Reference		249069-49
Your Reference	UNITS	RB1
Date Sampled		13/08/2020
Type of sample		Water
Date extracted	-	18/08/2020
Date analysed	-	18/08/2020
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
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	%	116
Surrogate toluene-d8	%	96
Surrogate 4-BFB	%	81

svTRH (C10-C40) in Water		
Our Reference		249069-49
Your Reference	UNITS	RB1
Date Sampled		13/08/2020
Type of sample		Water
Date extracted	-	18/08/2020
Date analysed	-	19/08/2020
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	97

PAHs in Water		
Our Reference	UNITS	249069-49
Your Reference		RB1
Date Sampled		13/08/2020
Type of sample		Water
Date extracted	-	18/08/2020
Date analysed	-	18/08/2020
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	83

HM in water - dissolved		
Our Reference	UNITS	249069-49
Your Reference		RB1
Date Sampled		13/08/2020
Type of sample		Water
Date prepared	-	18/08/2020
Date analysed	-	18/08/2020
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	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.
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.
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.

Method ID	Methodology Summary
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.
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.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			19/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	89	76
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	89	76
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	79	65
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	88	73
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	93	80
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	93	80
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	94	81
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	92	1	96	94	2	104	89

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	18/08/2020	18/08/2020		19/08/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	24	<25	<25	0	89	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	24	<25	<25	0	89	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	24	<0.2	<0.2	0	80	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	24	<0.5	<0.5	0	87	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	92	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	24	<2	<2	0	93	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	94	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	24	93	97	4	104	[NT]

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]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	19/08/2020	19/08/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	44	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	44	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	44	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	44	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	44	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	44	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	44	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	44	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	44	91	94	3	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	118
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	87	93
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	108	109
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	118
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	87	93
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	108	109
Surrogate o-Terphenyl	%		Org-020	81	1	81	81	0	127	81

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	24	<50	<50	0	125	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	99	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	123	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	24	<50	<50	0	125	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	99	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	123	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	24	82	80	2	128	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	44	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	44	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	44	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	44	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	44	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	44	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	44	81	81	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	84
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	91	86
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	79
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	93
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	<0.1	0	96	91
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	89
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	<0.1	0	94	90
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	<0.05	0	95	88
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	112	1	109	108	1	110	104

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	86	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	126	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	86	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	75	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	77	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	80	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	92	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	24	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	24	<0.05	<0.05	0	80	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	24	112	112	0	75	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	19/08/2020	19/08/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	44	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	44	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	44	76	74	3	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	78
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	77	75
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	77	71
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	92
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	91
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	94	91
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	85
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	73
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	70	80
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	82	98
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	103	1	100	98	2	100	96

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	76	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	87	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	103	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	72	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	93	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	76	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	99	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	70	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	70	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	95	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	24	102	100	2	77	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	19/08/2020	19/08/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	44	75	77	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	75
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	91	84
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	70	80
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	73
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	87
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	81
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	93	83
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	103	1	100	98	2	100	96

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	104	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	123	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	93	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	118	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	122	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	86	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	113	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	24	102	100	2	77	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	19/08/2020	19/08/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	44	75	77	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date extracted	-			18/08/2020	1	18/08/2020	18/08/2020		18/08/2020	18/08/2020
Date analysed	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
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	104	100
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	103	1	100	98	2	100	96

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			[NT]	24	18/08/2020	18/08/2020		18/08/2020	[NT]
Date analysed	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	106	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	24	102	100	2	77	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	18/08/2020	18/08/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	44	75	77	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	249069-5
Date prepared	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
Date analysed	-			19/08/2020	1	19/08/2020	19/08/2020		19/08/2020	19/08/2020
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	96	71
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	94	71
Chromium	mg/kg	1	Metals-020	<1	1	20	17	16	95	75
Copper	mg/kg	1	Metals-020	<1	1	14	13	7	97	87
Lead	mg/kg	1	Metals-020	<1	1	18	16	12	92	75
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	95	73
Nickel	mg/kg	1	Metals-020	<1	1	16	14	13	95	72
Zinc	mg/kg	1	Metals-020	<1	1	66	58	13	94	##
Iron	mg/kg	10	Metals-020	<10	1	20000	19000	5	102	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
Date analysed	-			[NT]	24	19/08/2020	19/08/2020		19/08/2020	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	24	<4	<4	0	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	24	<0.4	<0.4	0	101	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	24	4	5	22	101	[NT]
Copper	mg/kg	1	Metals-020	[NT]	24	13	14	7	99	[NT]
Lead	mg/kg	1	Metals-020	[NT]	24	4	5	22	96	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	24	<0.1	<0.1	0	80	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	24	1	1	0	103	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	24	8	8	0	104	[NT]
Iron	mg/kg	10	Metals-020	[NT]	24	9300	12000	25	107	[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]	44	19/08/2020	19/08/2020		[NT]	[NT]
Date analysed	-			[NT]	44	19/08/2020	19/08/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	44	7	<4	55	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	44	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	44	15	17	12	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	44	14	12	15	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	44	14	13	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	44	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	44	10	13	26	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	44	36	37	3	[NT]	[NT]
Iron	mg/kg	10	Metals-020	[NT]	44	27000	24000	12	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Date analysed	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[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]	104	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	107	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	108	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate toluene-d8	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	95	[NT]
Surrogate 4-BFB	%		Org-023	83	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Date analysed	-			19/08/2020	[NT]	[NT]	[NT]	[NT]	19/08/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[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]	88	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	94	[NT]	[NT]	[NT]	[NT]	73	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Date analysed	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	91	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Date analysed	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[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]	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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.

Note: All samples analysed as received. However, samples 249069-7,20,26,32,42 are below the minimum 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

8 metals in soil :
- # 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.

Envirolab Services Pty Ltd
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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	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras

Sample Login Details

Your reference	CES161003-HC
Envirolab Reference	249069
Date Sample Received	14/08/2020
Date Instructions Received	14/08/2020
Date Results Expected to be Reported	21/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	48 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4.4
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	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	Asbestos ID - soils NEPM - ASB-001	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved	On Hold
SB1/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB1/0.5													✓
SB1/1.0													✓
SB1/2.0													✓
SB1/3.0	✓	✓	✓	✓	✓	✓	✓						
SB2/0.1													✓
SB2/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB2/1.0													✓
SB2/2.0													✓
SB3/0.1													✓
SB3/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB3/1.0													✓
SB4/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB4/0.5													✓
SB4/1.0	✓	✓	✓	✓	✓	✓	✓						
SB5/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB5/0.5													✓
SB5/1.0													✓
SB6/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB6/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB6/1.0													✓
SB7/0.1													✓
SB7/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB7/1.0	✓	✓	✓	✓	✓	✓	✓						
SB8/0.1													✓
SB8/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB8/1.0													✓
SB8/2.0	✓	✓	✓	✓	✓	✓	✓						
SB9/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB9/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB9/1.5													✓
SB10/0.1	✓	✓	✓	✓	✓	✓	✓	✓					

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Sample ID	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	Asbestos ID - soils NEPM - ASB-001	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved	On Hold
SB10/0.5													✓
SB10/1.0													✓
SB11/0.1	✓	✓	✓	✓	✓	✓	✓	✓					
SB11/0.5													✓
SB11/1.0	✓	✓	✓	✓	✓	✓	✓						
SB12/0.1													✓
SB12/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB12/1.0													✓
SB13/0.1													✓
SB13/0.5	✓	✓	✓	✓	✓	✓	✓	✓					
SB13/1.0													✓
QS1	✓	✓	✓	✓	✓	✓	✓	✓					
QS2													✓
QS2A													✓
TS	✓												
TB	✓												
RB1									✓	✓	✓	✓	

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.

COC rec'd : 1442

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 /
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Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
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Brisbane Office - Envirolab Services
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Ph 07 3266 9532 /
brisbane@envirolab.com.au

Adelaide Office - Envirolab Services

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

Job No: 249059
Date Received: 14/8/20
Time Received: 1305
Received By: JD
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
JD

Client: Consulting Earth Scientists	Client Project Name / Number / Site etc (ie report title): Randwick Close, Casula
Contact Person: Andrew Carras	
Project Mgr: Andrew Carras	PO No.: CES161003-HC
Sampler: A.C.	Envirolab Quote No. :
Address: 55 Grandview St, Pymble, NSW 2073	Date results required: **Standard** *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: Mob: 0497 018 918	Report format: esdat / equis /
Email: andrew.carras@consultingearth.com.au;	Lab Comments:

Sample information					Tests Required												Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combination 6a (NEPM asbestos)	Combination 6	vTRH BTEX	Combination 3								Hold	Provide as much information about the sample as you can
1	SB1/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
2	SB1/0.5	-	13.08.20	Soil												X	1 chem, 1 asb
3	SB1/1.0	-	13.08.20	Soil												X	1 chem, 1 asb
4	SB1/2.0	-	13.08.20	Soil												X	1 chem, 1 asb
5	SB1/3.0	-	13.08.20	Soil		X											1 chem
6	SB2/0.1	-	13.08.20	Soil												X	1 chem, 1 asb
7	SB2/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
8	SB2/1.0	-	13.08.20	Soil												X	1 chem, 1 asb
9	SB2/2.0	-	13.08.20	Soil												X	1 chem, 1 asb
10	SB3/0.1	-	13.08.20	Soil												X	1 chem, 1 asb
11	SB3/0.5	-	13.08.20	Soil	X												1 chem, 1 asb,
12	SB3/1.0	-	13.08.20	Soil												X	1 chem + 1ASB.
13	SB4/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
14	SB4/0.5	-	13.08.20	Soil												X	1 chem + 1ASB
15	SB4/1.0	-	13.08.20	Soil		X											1 chem + 1ASB
16	SB5/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
17	SB5/0.5	-	13.08.20	Soil												X	1 chem
18	SB5/1.0	-	13.08.20	Soil												X	1 chem
19	SB6/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
20	SB6/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
21	SB6/1.0	-	13.08.20	Soil												X	1 chem, 1 asb
22	SB7/0.1	-	13.08.20	Soil												X	1 chem, 1 asb
23	SB7/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
24	SB7/1.0	-	13.08.20	Soil		X											1 chem, 1 asb
25	SB8/0.1	-	13.08.20	Soil												X	1 chem, 1 asb

JD 14/8.

26	SB8/0.5	-	13.08.20	Soil	X													1 chem, 1 asb
27	SB8/1.0	-	13.08.20	Soil												X		1 chem, 1 asb
28	SB8/2.0	-	13.08.20	Soil		X												1 chem, 1 asb
29	SB9/0.1	-	13.08.20	Soil	X													1 chem, 1 asb
30	SB9/0.5	-	13.08.20	Soil	X													1 chem, 1 asb
31	SB9/1.5	-	13.08.20	Soil												X		1 chem
32	SB10/0.1	-	13.08.20	Soil	X													1 chem, 1 asb
33	SB10/0.5	-	13.08.20	Soil												X		1 chem, 1 asb
34	SB10/1.0	-	13.08.20	Soil												X		1 chem
35	SB11/0.1	-	13.08.20	Soil	X													1 chem, 1 asb
36	SB11/0.5	-	13.08.20	Soil												X		1 chem, 1 asb
37	SB11/1.0	-	13.08.20	Soil		X												1 chem
38	SB12/0.1	-	13.08.20	Soil												X		1 chem, 1 asb
39	SB12/0.5	-	13.08.20	Soil	X													1 chem, 1 asb
40	SB12/1.0	-	13.08.20	Soil												X		1 chem
41	SB13/0.1	-	13.08.20	Soil												X		1 chem, 1 asb
42	SB13/0.5	-	13.08.20	Soil	X													1 chem, 1 asb
43	SB13/1.0	-	13.08.20	Soil												X		1 chem, 1 asb
44	QS1	-	13.08.20	Soil	X													1 chem, 1 asb
—	QS1A	-	13.08.20	Soil	X													1 chem, 1 asb, send to ALS
45	QS2	-	13.08.20	Soil												X		1 chem, 1 asb
46	QS2A	-	13.08.20	Soil												X		1 chem, 1 asb
47	TS	-	13.08.20	Soil			X											1 vial
48	TB	-	13.08.20	Soil			X											1 vial
49	RB1	-	13.08.20	Water				X										2 vials, 1 metals (total metals), 1 amber

Relinquished by (Company):	CES	**Received by (Company):**	ELS STO
Print Name:	Andrew Carras	**Print Name:**	Jason Dey
Date & Time:	14.08.20	**Date & Time:**	14/8/20 1305
Signature:	Andrew Carras	**Signature:**	

Lab use only: ICE
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 4.4 (if applicable)
Transported by: Hand delivered / courier

in in Book

Page No: 1/1

349069

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2028777**	Page	: 1 of 8
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Randwick Close, Casula	Date Samples Received	: 17-Aug-2020 16:50
Order number	: CES161003-HC	Date Analysis Commenced	: 18-Aug-2020
C-O-C number	: ----	Issue Date	: 24-Aug-2020 09:52
Sampler	: ----		
Site	: ----		
Quote number	: SYBQ/521/16		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

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

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QS1A	----	----	----	----
			Client sampling date / time	13-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2028777-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**17.8**	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	----	----	----	----
Sample weight (dry)	----	0.01	g	**587**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	----	----	----	----
ø **Asbestos Containing Material**	1332-21-4	0.1	g	<0.1	----	----	----	----
ø **Asbestos Containing Material (as 15% Asbestos in ACM >7mm)**	1332-21-4	0.01	% (w/w)	<0.01	----	----	----	----
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.587**	----	----	----	----
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**9**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**11**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**12**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**7**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**22**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS1A	----	----	----	----
				Client sampling date / time	13-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2028777-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS1A	----	----	----	----
				Client sampling date / time	13-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2028777-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS1A	----	----	----	----
				Client sampling date / time	13-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2028777-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**76.1**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**71.3**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**59.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**103**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**102**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**98.4**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**122**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**117**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**101**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS1A	----	----	----	----
				Client sampling date / time	13-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2028777-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**91.4**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**88.2**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**92.0**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QS1A - 13-Aug-2020 00:00	Mid brown soil.

Surrogate Control Limits

Sub-Matrix: **SOIL**

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

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2028777**

Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: andrew.carras@consultingearth.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: Randwick Close, Casula	Page	: 1 of 2
Order number	: CES161003-HC	Quote number	: ES2017CONEAR0001 (SYBQ/521/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 17-Aug-2020 16:50	Issue Date	: 17-Aug-2020
Client Requested Due Date	: 24-Aug-2020	Scheduled Reporting Date	: **24-Aug-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: ----	Temperature	: 13.5'C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - S-13 OC/OP/PCB	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2028777-001	13-Aug-2020 00:00	QS1A	✓	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

ANDREW CARRAS

- *AU Certificate of Analysis - NATA (COA)	Email	andrew.carras@consultingearth.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	andrew.carras@consultingearth.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	andrew.carras@consultingearth.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	andrew.carras@consultingearth.com.au
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ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2028777**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Telephone	: +61-2-8784 8555
Project	: Randwick Close, Casula	Date Samples Received	: 17-Aug-2020
Site	: ----	Issue Date	: 24-Aug-2020
Sampler	: ----	No. of samples received	: 1
Order number	: CES161003-HC	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
QS1A	**13-Aug-2020**	**----**	----	----	**19-Aug-2020**	27-Aug-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag: Separate bag received (EA200)							
QS1A	**13-Aug-2020**	**----**	----	----	**19-Aug-2020**	09-Feb-2021	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag: Separate bag received (EA200N)							
QS1A	**13-Aug-2020**	**----**	----	----	**19-Aug-2020**	09-Feb-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	09-Feb-2021	✓	**19-Aug-2020**	09-Feb-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	10-Sep-2020	✓	**20-Aug-2020**	10-Sep-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QS1A	**13-Aug-2020**	**18-Aug-2020**	27-Aug-2020	✓	**19-Aug-2020**	27-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QS1A	**13-Aug-2020**	**18-Aug-2020**	27-Aug-2020	✓	**19-Aug-2020**	27-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
QS1A	**13-Aug-2020**	**19-Aug-2020**	27-Aug-2020	✓	**20-Aug-2020**	28-Sep-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QS1A	**13-Aug-2020**	**18-Aug-2020**	27-Aug-2020	✓	**19-Aug-2020**	27-Aug-2020	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM with Confirmation of Identification by AS 4964 - Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions

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

COC rec'd: 1442

CHAIN OF CUSTODY - Client

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Environmental Division
Sydney
Work Order Reference
ES2028777

Client: Consulting Earth Scientists	Client Project Name / Number / Site etc (ie report title): Randwick Close, Casula
Contact Person: Andrew Carras	
Project Mgr: Andrew Carras	PO No.: CES161003-HC
Sampler: A.C.	Envirolab Quote No. :
Address: 55 Grandview St, Pymble, NSW 2073	Date results required: Standard *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: Mob: 0497 018 918	Report format: esdat / equis /
Email: andrew.carras@consultingearth.com.au;	Lab Comments:

Sample Information					Tests Required											Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combination 6a (NEPM asbestos)	Combination 6	vTRH BTEX	Combination 3	Relinquished by EDS Sydney						Hold	Provide as much information about the sample as you can
1	SB1/0.1	-	13.08.20	Soil	X											1 chem, 1 asb
2	SB1/0.5	-	13.08.20	Soil											X	1 chem, 1 asb
3	SB1/1.0	-	13.08.20	Soil											X	1 chem, 1 asb
4	SB1/2.0	-	13.08.20	Soil											X	1 chem, 1 asb
5	SB1/3.0	-	13.08.20	Soil		X										1 chem
6	SB2/0.1	-	13.08.20	Soil											X	1 chem, 1 asb
7	SB2/0.5	-	13.08.20	Soil	X											1 chem, 1 asb
8	SB2/1.0	-	13.08.20	Soil												1 chem, 1 asb
9	SB2/2.0	-	13.08.20	Soil											X	1 chem, 1 asb
10	SB3/0.1	-	13.08.20	Soil											X	1 chem, 1 asb
11	SB3/0.5	-	13.08.20	Soil	X										X	1 chem, 1 asb,
12	SB3/1.0	-	13.08.20	Soil												1 chem + 1ASB.
13	SB4/0.1	-	13.08.20	Soil	X											1 chem, 1 asb
14	SB4/0.5	-	13.08.20	Soil											X	1 chem + 1ASB
15	SB4/1.0	-	13.08.20	Soil		X										1 chem + 1ASB
16	SB5/0.1	-	13.08.20	Soil	X											1 chem, 1 asb
17	SB5/0.5	-	13.08.20	Soil											X	1 chem
18	SB5/1.0	-	13.08.20	Soil											X	1 chem
19	SB6/0.1	-	13.08.20	Soil	X											1 chem, 1 asb
20	SB6/0.5	-	13.08.20	Soil	X											1 chem, 1 asb
21	SB6/1.0	-	13.08.20	Soil											X	1 chem, 1 asb
22	SB7/0.1	-	13.08.20	Soil											X	1 chem, 1 asb
23	SB7/0.5	-	13.08.20	Soil	X											1 chem, 1 asb
24	SB7/1.0	-	13.08.20	Soil		X										1 chem, 1 asb
25	SB8/0.1	-	13.08.20	Soil											X	1 chem, 1 asb

JD 14/8.

26	SB8/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
27	SB8/1.0	-	13.08.20	Soil												X	1 chem, 1 asb
28	SB8/2.0	-	13.08.20	Soil		X											1 chem, 1 asb
29	SB9/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
30	SB9/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
31	SB9/1.5	-	13.08.20	Soil												X	1 chem
32	SB10/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
33	SB10/0.5	-	13.08.20	Soil												X	1 chem, 1 asb
34	SB10/1.0	-	13.08.20	Soil												X	1 chem
35	SB11/0.1	-	13.08.20	Soil	X												1 chem, 1 asb
36	SB11/0.5	-	13.08.20	Soil												X	1 chem, 1 asb
37	SB11/1.0	-	13.08.20	Soil		X											1 chem
38	SB12/0.1	-	13.08.20	Soil												X	1 chem, 1 asb
39	SB12/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
40	SB12/1.0	-	13.08.20	Soil												X	1 chem
41	SB13/0.1	-	13.08.20	Soil												X	1 chem, 1 asb
42	SB13/0.5	-	13.08.20	Soil	X												1 chem, 1 asb
43	SB13/1.0	-	13.08.20	Soil												X	1 chem, 1 asb
44	QS1	-	13.08.20	Soil	X												1 chem, 1 asb
—	QS1A	-	13.08.20	Soil	X												1 chem, 1 asb, send to ALS
45	QS2	-	13.08.20	Soil												X	1 chem, 1 asb
46	QS2A	-	13.08.20	Soil												X	1 chem, 1 asb
47	TS	-	13.08.20	Soil			X										1 vial
48	TB	-	13.08.20	Soil			X										1 vial
49	RB1	-	13.08.20	Water				X									2 vials, 1 metals (total metals), 1 amber

Relinquished by (Company): CES	**Received by (Company):** ELS SYD	**Lab use only:** ICE
Print Name: Andrew Carras	**Print Name:** Jason Day	**Samples Received:** (Cool) or Ambient (circle one)
Date & Time: 14.08.20	**Date & Time:** 14/8/20 1305	**Temperature Received at:** 4.4 (if applicable)
Signature: Andrew Carras	**Signature:** [signature]	**Transported by:** Hand delivered / courier

ain in Book

Page No: 1/1

Relinquished by ELS Syd
C Mulenzie
17/8/20 @100
CM.

249069

REC: FRAZ: [signature] 17/8/~
4:53

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 249512

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**Randwick Close, Casula**
Number of Samples	7 Water
Date samples received	21/08/2020
Date completed instructions received	21/08/2020

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	28/08/2020
Date of Issue	27/08/2020

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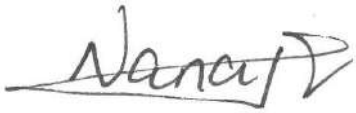
Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		249512-1	249512-2	249512-3	249512-4	249512-5
Your Reference	UNITS	GW1	GW2	GW3	QW1	TS
Date Sampled		21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Date analysed	-	25/08/2020	25/08/2020	25/08/2020	25/08/2020	25/08/2020
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	115%
Toluene	µg/L	<1	<1	<1	<1	103%
Ethylbenzene	µg/L	<1	<1	<1	<1	93%
m+p-xylene	µg/L	<2	<2	<2	<2	103%
o-xylene	µg/L	<1	<1	<1	<1	102%
Naphthalene	µg/L	<1	<1	<1	<1	103%
Surrogate Dibromofluoromethane	%	125	128	127	128	117
Surrogate toluene-d8	%	95	95	94	94	94
Surrogate 4-BFB	%	85	88	84	83	102

vTRH(C6-C10)/BTEXN in Water			
Our Reference		249512-6	249512-7
Your Reference	UNITS	TB	RB2
Date Sampled		21/08/2020	21/08/2020
Type of sample		Water	Water
Date extracted	-	24/08/2020	24/08/2020
Date analysed	-	25/08/2020	25/08/2020
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	%	128	129
Surrogate toluene-d8	%	94	94
Surrogate 4-BFB	%	84	86

svTRH (C10-C40) in Water						
Our Reference		249512-1	249512-2	249512-3	249512-4	249512-7
Your Reference	UNITS	GW1	GW2	GW3	QW1	RB2
Date Sampled		21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
Date analysed	-	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	105	129	111	97	114

PAHs in Water - Low Level						
Our Reference		249512-1	249512-2	249512-3	249512-4	249512-7
Your Reference	UNITS	GW1	GW2	GW3	QW1	RB2
Date Sampled		21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2020	26/08/2020	26/08/2020	26/08/2020	26/08/2020
Date analysed	-	27/08/2020	27/08/2020	27/08/2020	27/08/2020	27/08/2020
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	87	100	86	76	91

HM in water - dissolved						
Our Reference		249512-1	249512-2	249512-3	249512-4	249512-7
Your Reference	UNITS	GW1	GW2	GW3	QW1	RB2
Date Sampled		21/08/2020	21/08/2020	21/08/2020	21/08/2020	21/08/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Date analysed	-	24/08/2020	24/08/2020	24/08/2020	24/08/2020	24/08/2020
Arsenic-Dissolved	µg/L	<1	<1	1	2	<1
Cadmium-Dissolved	µg/L	<0.1	0.3	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	34	29	4	21	<1
Lead-Dissolved	µg/L	<1	1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	170	6	3	5	<1
Zinc-Dissolved	µg/L	87	60	5	29	<1

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-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: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			24/08/2020	1	24/08/2020	25/08/2020		24/08/2020	[NT]
Date analysed	-			25/08/2020	1	25/08/2020	25/08/2020		25/08/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	101	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	101	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	94	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	105	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	111	1	125	127	2	95	[NT]
Surrogate toluene-d8	%		Org-023	94	1	95	93	2	93	[NT]
Surrogate 4-BFB	%		Org-023	82	1	85	87	2	115	[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	-			26/08/2020	[NT]	[NT]	[NT]	[NT]	26/08/2020	[NT]
Date analysed	-			26/08/2020	[NT]	[NT]	[NT]	[NT]	26/08/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	118	[NT]
Surrogate o-Terphenyl	%		Org-020	105	[NT]	[NT]	[NT]	[NT]	77	[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	-			26/08/2020	[NT]	[NT]	[NT]	[NT]	26/08/2020	[NT]
Date analysed	-			27/08/2020	[NT]	[NT]	[NT]	[NT]	27/08/2020	[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]	83	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	68	[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]	72	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	71	[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]	72	[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]	67	[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	93	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W9	[NT]
Date prepared	-			24/08/2020	1	24/08/2020	24/08/2020		24/08/2020	[NT]
Date analysed	-			24/08/2020	1	24/08/2020	24/08/2020		24/08/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	90	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	34	34	0	98	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	106	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		106	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	170	170	0	93	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	87	76	13	95	[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.

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	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras

Sample Login Details

Your reference	Randwick Close, Casula
Envirolab Reference	249512
Date Sample Received	21/08/2020
Date Instructions Received	21/08/2020
Date Results Expected to be Reported	28/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	7 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	1.2
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
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Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	HM in water - dissolved
GW1	✓	✓	✓	✓
GW2	✓	✓	✓	✓
GW3	✓	✓	✓	✓
QW1	✓	✓	✓	✓
TS	✓			
TB	✓			
RB2	✓	✓	✓	✓

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.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 /
sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 /
melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 /
brisbane@envirolab.com.au

Adelaide Office - Envirolab Services

Client: Consulting Earth Scientists	Client Project Name / Number / Site etc (ie report title): Randwick Close, Casula
Contact Person: Andrew Carras	
Project Mgr: Andrew Carras	PO No.: CES161003-HC
Sampler: A.C.	Envirolab Quote No. :
Address: 55 Grandview St, Pymble, NSW 2073	Date results required: **Standard** *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: Mob: 0497 018 918	Report format: esdat / equis /
Email: andrew.carras@consultingearth.com.au;	Lab Comments:

Sample information					Tests Required											Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combination 6a (NEPM asbestos)	Combination 6	vTRH BTEX	Combination 3	Combination 3L						Hold	Provide as much information about the sample as you can
1	GW1		21.08.20	Water					X							PAH Low
2	GW2		21.08.20	Water					X							PAH Low
3	GW3		21.08.20	Water					X							PAH Low
4	QW1		21.08.20	Water					X							PAH Low
—	QW1A		21.08.20	Water					X							Send to ALS, PAH Low
5	TS		21.08.20	Water			X									
6	TB		21.08.20	Water			X									
7	RB2		21.08.20	Water					X							Total Metals

Relinquished by (Company):	CES			Received by (Company): En	Lab use only:
Print Name:	Andrew Carras			Print Name: Ray	Samples Received: Cool or Ambient (circle one)
Date & Time:	21/08/2020			Date & Time: 21/8/2020 1045	Temperature Received at: (if applicable)
Signature:	Andrew Carras			Signature:	Transported by: Hand delivered / courier

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

Job No: 249512

Date Received: 21/8/2020

Time Received: 10.45

Received By: RL

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

ain in Book

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2029723**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Randwick Close, Casula	Date Samples Received	: 24-Aug-2020 17:30
Order number	: CES161003-HC	Date Analysis Commenced	: 26-Aug-2020
C-O-C number	: ----	Issue Date	: 01-Sep-2020 11:27
Sampler	: A.C.		
Site	: ----		
Quote number	: SYBQ/521/16		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

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

General Comments

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

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

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

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

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

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

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

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP132: Where reported, Total PAH reported as the sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i)perylene.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QW1A	----	----	----	----
				Client sampling date / time	21-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2029723-001	--------	--------	--------	--------	
				Result	----	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	**0.008**	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	**0.004**	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	**0.015**	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	----	----	
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ **Total Xylenes**	----	2	µg/L	<2	----	----	----	----	
^ **Sum of BTEX**	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QW1A	----	----	----	----
				Client sampling date / time	21-Aug-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2029723-001	--------	--------	--------	--------
					Result	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	----	----	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	----	----	----	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	----	----	----	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	----	----	----	----
Anthracene	120-12-7	0.1	µg/L		<0.1	----	----	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	----	----	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.1	µg/L		<0.1	----	----	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	----	----	----	----
Chrysene	218-01-9	0.1	µg/L		<0.1	----	----	----	----
Coronene	191-07-1	0.1	µg/L		<0.1	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	----	----	----	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	----	----	----	----
Fluorene	86-73-7	0.1	µg/L		<0.1	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	----	----	----	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	----	----	----	----
Perylene	198-55-0	0.1	µg/L		<0.1	----	----	----	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	----	----	----	----
Pyrene	129-00-0	0.1	µg/L		<0.1	----	----	----	----
^ Sum of PAHs	----	0.05	µg/L		<0.05	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.05	µg/L		<0.05	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**95.0**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**105**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**102**	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**90.7**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**91.2**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**92.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	43	135
Anthracene-d10	1719-06-8	48	138
4-Terphenyl-d14	1718-51-0	48	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2029723**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Telephone	: +61-2-8784 8555
Project	: Randwick Close, Casula	Date Samples Received	: 24-Aug-2020
Site	: ----	Issue Date	: 01-Sep-2020
Sampler	: A.C.	No. of samples received	: 1
Order number	: CES161003-HC	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation* ***Date extracted***	*Due for extraction*	*Evaluation*	*Analysis* ***Date analysed***	*Due for analysis*	*Evaluation*
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QW1A	**21-Aug-2020**	**----**	----	----	**27-Aug-2020**	17-Feb-2021	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QW1A	**21-Aug-2020**	**----**	----	----	**27-Aug-2020**	18-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QW1A	**21-Aug-2020**	**26-Aug-2020**	28-Aug-2020	✓	**27-Aug-2020**	05-Oct-2020	✓
Clear glass VOC vial - HCl (EP080) QW1A	**21-Aug-2020**	**28-Aug-2020**	04-Sep-2020	✓	**28-Aug-2020**	04-Sep-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QW1A	**21-Aug-2020**	**26-Aug-2020**	28-Aug-2020	✓	**27-Aug-2020**	05-Oct-2020	✓
Clear glass VOC vial - HCl (EP080) QW1A	**21-Aug-2020**	**28-Aug-2020**	04-Sep-2020	✓	**28-Aug-2020**	04-Sep-2020	✓
EP080: BTEXN							
Clear glass VOC vial - HCl (EP080) QW1A	**21-Aug-2020**	**28-Aug-2020**	04-Sep-2020	✓	**28-Aug-2020**	04-Sep-2020	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP132) QW1A	**21-Aug-2020**	**27-Aug-2020**	28-Aug-2020	✓	**28-Aug-2020**	06-Oct-2020	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	WATER	In house: Referenced to USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	In house: Referenced to USEPA 3510 (Extraction) / In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with echange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2029723**

Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: ANDREW CARRAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: andrew.carras@consultingearth.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: Randwick Close, Casula	Page	: 1 of 2
Order number	: CES161003-HC	Quote number	: ES2017CONEAR0001 (SYBQ/521/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: A.C.		

Dates

Date Samples Received	: 24-Aug-2020 17:30	Issue Date	: 24-Aug-2020
Client Requested Due Date	: 01-Sep-2020	Scheduled Reporting Date	: **01-Sep-2020**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 15.7' C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP132B(PAH) Ultra Trace Polynuclear Aromatic Compounds	WATER - W-05 TRH/BTEXN/8 Metals
ES2029723-001	21-Aug-2020 00:00	QW1A	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

ANDREW CARRAS

- *AU Certificate of Analysis - NATA (COA)	Email	andrew.carras@consultingearth.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	andrew.carras@consultingearth.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	andrew.carras@consultingearth.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	andrew.carras@consultingearth.com.au
- Chain of Custody (CoC) (COC)	Email	andrew.carras@consultingearth.com.au
- EDI Format - ENMRG (ENMRG)	Email	andrew.carras@consultingearth.com.au
- EDI Format - ESDAT (ESDAT)	Email	andrew.carras@consultingearth.com.au

KAY LOWE

- A4 - AU Tax Invoice (INV)	Email	kay.lowe@consultingearth.com.au

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 /
sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 /
melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 /
brisbane@envirolab.com.au

Adelaide Office - Envirolab Services

Client: Consulting Earth Scientists	**Client Project Name / Number / Site etc (ie report title):** Randwick Close, Casula
Contact Person: Andrew Carras	
Project Mgr: Andrew Carras	**PO No.:** CES161003-HC
Sampler: A.C.	**Envirolab Quote No.:**
Address: 55 Grandview St, Pymble, NSW 2073	**Date results required:** **Standard** *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: **Mob:** 0497 018 918	**Report format:** esdat / equis /
Email: andrew.carras@consultingearth.com.au;	**Lab Comments:**

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combination 6a (NEPM asbestos)	Combination 6	vTRH BTEX	Combination 3	Combination 3L						Hold	Comments: Provide as much information about the sample as you can
1	GW1		21.08.20	Water					X							PAH Low
2	GW2		21.08.20	Water					X							PAH Low
3	GW3		21.08.20	Water					X							PAH Low
4	QW1		21.08.20	Water					X							PAH Low
—	QW1A		21.08.20	Water					X							Send to ALS, PAH Low
5	TS		21.08.20	Water			X									
6	TB		21.08.20	Water			X									
7	RB2		21.08.20	Water					X							Total Metals

Relinquished by (Company):	CES	ELS Syd	**Receive**
Print Name:	Andrew Carras	IC Gore	**Print Na**
Date & Time:	21/08/2020	24/08/2020	**Date & T**
Signature:	Andrew Carras		**Signatu**

Environmental Division
Sydney
Work Order Reference
ES2029723

Telephone : + 61-2-8784 8555

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

Job No: 249512
Date Received: 21/8/2020
Time Received: 10.45
Received By: PM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: **(if applicable)**
Transported by: Hand delivered / courier

tin in Book

Page No: 1/1

Received 24/8/20 17.30
15.7

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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CERTIFICATE OF ANALYSIS 249069-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES161003-HC**
Number of Samples	48 Soil, 1 Water
Date samples received	14/08/2020
Date completed instructions received	28/08/2020

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	04/09/2020
Date of Issue	04/09/2020

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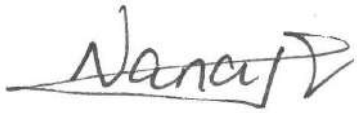
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Hannah Nguyen, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

CEC		
Our Reference		249069-A-23
Your Reference	UNITS	SB7/0.5
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	02/09/2020
Date analysed	-	03/09/2020
Exchangeable Ca	meq/100g	2.9
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	4.2
Exchangeable Na	meq/100g	0.80
Cation Exchange Capacity	meq/100g	8.1

Misc Inorg - Soil		
Our Reference	UNITS	249069-A-23
Your Reference		SB7/0.5
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	02/09/2020
Date analysed	-	02/09/2020
Total Organic Carbon (Walkley Black)	mg/kg	9,500
pH 1:5 soil:$CaCl_2$	pH Units	5.4

Clay 50-120g		
Our Reference		249069-A-23
Your Reference	UNITS	SB7/0.5
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	02/09/2020
Date analysed	-	03/09/2020
Clay in soils <2µm	% (w/w)	13

Acid Extractable metals in soil		
Our Reference		249069-A-23
Your Reference	UNITS	SB7/0.5
Date Sampled		13/08/2020
Type of sample		Soil
Date prepared	-	31/08/2020
Date analysed	-	31/08/2020
Iron	mg/kg	29,000

Method ID	Methodology Summary
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2µm reported.
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-036	Total Organic Carbon or Matter - A titrimetric method that measures the oxidisable organic content of soils.
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.

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			02/09/2020	[NT]	[NT]	[NT]	[NT]	02/09/2020	[NT]
Date analysed	-			03/09/2020	[NT]	[NT]	[NT]	[NT]	03/09/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			02/09/2020	[NT]	[NT]	[NT]	[NT]	02/09/2020	[NT]
Date analysed	-			02/09/2020	[NT]	[NT]	[NT]	[NT]	02/09/2020	[NT]
Total Organic Carbon (Walkley Black)	mg/kg	1000	Inorg-036	<1000	[NT]	[NT]	[NT]	[NT]	92	[NT]
pH 1:5 soil:$CaCl_2$	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			31/08/2020	[NT]	[NT]	[NT]	[NT]	31/08/2020	[NT]
Date analysed	-			31/08/2020	[NT]	[NT]	[NT]	[NT]	31/08/2020	[NT]
Iron	mg/kg	10	Metals-020	<10	[NT]	[NT]	[NT]	[NT]	100	[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

pH
Samples were out of the recommended holding time for this analysis.

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SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Andrew Carras

Sample Login Details

Your reference	CES161003-HC
Envirolab Reference	249069-A
Date Sample Received	14/08/2020
Date Instructions Received	28/08/2020
Date Results Expected to be Reported	04/09/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	48 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4.4
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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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
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Sample ID	CEC	Misc Inorg - Soil	Clay 50-120g	Acid Extractable metalsin soil	On Hold
SB1/0.1					✓
SB1/0.5					✓
SB1/1.0					✓
SB1/2.0					✓
SB1/3.0					✓
SB2/0.1					✓
SB2/0.5					✓
SB2/1.0					✓
SB2/2.0					✓
SB3/0.1					✓
SB3/0.5					✓
SB3/1.0					✓
SB4/0.1					✓
SB4/0.5					✓
SB4/1.0					✓
SB5/0.1					✓
SB5/0.5					✓
SB5/1.0					✓
SB6/0.1					✓
SB6/0.5					✓
SB6/1.0					✓
SB7/0.1					✓
SB7/0.5	✓	✓	✓	✓	
SB7/1.0					✓
SB8/0.1					✓
SB8/0.5					✓
SB8/1.0					✓
SB8/2.0					✓
SB9/0.1					✓
SB9/0.5					✓
SB9/1.5					✓
SB10/0.1					✓

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Sample ID	CEC	Misc Inorg - Soil	Clay 50-120g	Acid Extractable metalsin soil	On Hold
SB10/0.5					✓
SB10/1.0					✓
SB11/0.1					✓
SB11/0.5					✓
SB11/1.0					✓
SB12/0.1					✓
SB12/0.5					✓
SB12/1.0					✓
SB13/0.1					✓
SB13/0.5					✓
SB13/1.0					✓
QS1					✓
QS2					✓
QS2A					✓
TS					✓
TB					✓
RB1					✓

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.

Ming To

From: Nick Sarlamis
Sent: Friday, 28 August 2020 12:22 PM
To: andrew.carras@consultingearth.com.au; kay.lowe@consultingearth.com.au
Cc: Fezeh Lotfi; Ming To
Subject: RE: Spam:*, Results for Registration 249069 CES161003-HC

Ref: 249069-A
TAT: Standard
Due: 04/09/2020 MT.

No problem Andrew.

Kind Regards,

Nick Sarlamis | Inorganics Supervisor | Envirolab Services

Celebrating 15 years of **Great Science. Great Service.**

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E NSarlamis@envirolab.com.au | W www.envirolab.com.au

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Samples will be analysed per our T&C's.

From: Andrew Carras <andrew.carras@consultingearth.com.au>
Sent: Friday, 28 August 2020 10:39 AM
To: Nick Sarlamis <NSarlamis@envirolab.com.au>; kay.lowe@consultingearth.com.au
Cc: Fezeh Lotfi <f.lotfi@consultingearth.com.au>
Subject: RE: Spam:*, Results for Registration 249069 CES161003-HC

Hi Nick,

Could you please run sample SB7/0.5 for NEPM 2013 Soil Characteristics on a standard TAT? 28

Kind regards,
Andrew

From: Nick Sarlamis <NSarlamis@envirolab.com.au>
Sent: Friday, 21 August 2020 12:41 PM
To: andrew.carras@consultingearth.com.au; kay.lowe@consultingearth.com.au
Subject: Spam:*, Results for Registration 249069 CES161003-HC

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
a copy of the Invoice

Please note that a hard copy will not be posted.