Douglas Partners
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# Report on
# Waste Classification and Groundwater Quality Assessment

50 Honeysuckle Drive
Newcastle

Prepared for
Doma Holdings (NSW) Pty Ltd

Project 91034.00
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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

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# Report on Waste Classification and Groundwater Quality Assessment
# 50 Honeysuckle Drive
# Newcastle

## 1. Introduction

### 1.1 Scope of Work

This report presents the results of a waste classification and groundwater quality assessment undertaken at 50 Honeysuckle Drive, Newcastle. The investigation was commissioned in an email dated 8 December 2016 by Mr Chris Farrington of Doma Holdings (NSW) Pty Ltd and was undertaken with reference to Douglas Partners Pty Ltd (DP) proposal NCL160734 dated 22 November 2016.

The scope of work for the waste classification and groundwater quality assessment comprised the following:

- Review of the supplied information on former investigations;
- Site inspection / walkover;
- Drilling of test bores and installation of groundwater wells in selected bores;
- Field screening and collection of soil samples for chemical testing;
- Collection of groundwater samples from wells and surface water samples from the harbour for chemical testing;
- Chemical laboratory testing of soils for waste classification purposes and aggressivity;
- Acid sulfate soil (ASS) testing;
- Analysis of the results against the relevant NSW EPA waste classification guidelines and resource recovery orders (RRO) to confirm possible re-use and disposal options for soils to be excavated and removed from site;
- Assessment of groundwater quality and disposal / discharge options for site dewatering during construction;
- Preparation of this report presenting the results of the assessment.

The aim of the waste classification assessment was to classify the soils for beneficial re-use or disposal, and maximise potential re-use opportunities.

### 1.2 Proposed Development

It is understood that the development of the site will include:

- Three six-storey residential towers, with a single basement level carpark across the site, below all three towers;

- Existing ground levels range from about RL 1.8 to 2.9 AHD. The proposed bulk excavation level for construction of the basement is about RL -0.8 AHD. Localised deeper excavations (about 1 m below basement level) will be required for lift pit construction;
- The structure comprises reinforced concrete slabs on load bearing walls and columns. Column loads of 7500 kN (working) have been estimated by AWT Consulting Engineers Pty Ltd;
- The site currently comprises an operating bitumen sealed carpark.

Reference should be made to the architectural drawings provided in Appendix D showing the proposed development.

This assessment was part of a larger investigation that covered geotechnical design and mine subsidence matters. These aspects are reported separately. The current report presents the details of the field work and laboratory testing conducted for waste classification and groundwater quality purposes, together with comments on the findings and recommendations.

## 2. Site Description

The site currently comprises the eastern portion of Lot 2000 DP1145678, with the street address 50 Honeysuckle Drive, Newcastle. It is noted that subdivision approval has been granted for the site, and the site will therefore be known as 21 Honeysuckle Drive. The development site is roughly rectangular in shape (145 m to 160 m long by 46 m to 50 m wide) and has an approximated plan area of 7,230 $m^2$. The site is bounded to the south by Honeysuckle Drive, to the east by Worth Place and to the north and west by undeveloped land. Newcastle Harbour lies about 30 m to the north of the carpark.

The site is almost fully occupied by a bitumen-sealed carpark which is currently active (operated by Wilson Parking). The location and aerial view of the site is shown in Figure 1.

**Figure 1: Site Location - 50 Honeysuckle Drive, Newcastle (Photo dated 6 October 2016)**

## 3. Background Information

### 3.1 Published Data

The regional geology at the site is shown on the 1:100,000 scale regional geology map for Newcastle (Newcastle Coalfield Regional Geology, Sheet 9321, NSW Department of Mineral Resources). This map indicates that site is underlain by Quaternary Alluvium (Qa), comprising gravel, sand, silt and clay deposits.

The natural soils in this area are typically overlain by man-made fill materials to varying depths, related to reclamation, historical industrial usage, infrastructure and commercial development.

Reference to the Newcastle Acid Sulfate Soil Risk Map published by the Department of Land and Water Conservation indicates that the site has a high probability of ASS conditions occurring between 1 m and 3 m depth. The mapping is shown in Figure 2.

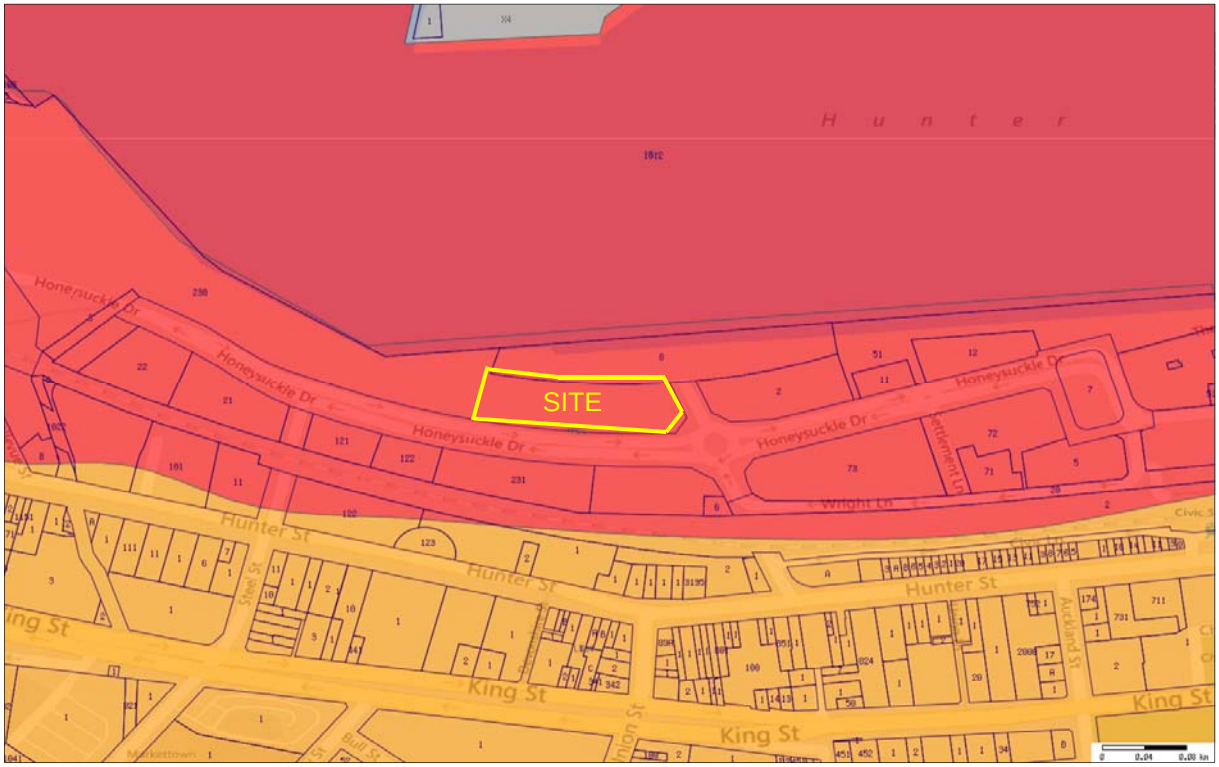


**Figure 2: Acid Sulfate Risk Mapping (DLWC)**

## 3.2 Previous Reports

Several previous investigations and reports have been conducted at or near the site over the years. The most relevant reports to the current assessment are:

- Remediation and Validation Report , prepared by RCA Australia, August 2005 (Ref 10);
- Site Audit Report and Site Audit Statement prepared by Environ, September 2005 (Ref 11);
- Preliminary Classification of Materials Report, prepared by JBS Environmental, June 2007 (Ref 12).

The RCA Remediation and Validation Report (Ref 10) indicated that the upper fill at the site was contaminated with elevated levels of Total Petroleum Hydrocarbons (TPH), benzo(a)pyrene (B(a)P) and total Polycyclic Aromatic Hydrocarbons (PAH). The soil contamination was generally confined to the upper 0.5 m. Other previous studies also identified elevated metals (notably copper, lead and zinc). Groundwater was encountered at about 2 m depth and found to have zinc concentrations marginally above the ANZECC 2000 (Ref 1) criterion.

Soil remedial works were conducted at the site which comprised the excavation of the upper 0.3 m to 0.7 m of impacted material in the north-west corner of the site. The impacted materials were generally associated with the former Wharf Road alignment (i.e. north west corner of the site). The impacted materials were transported to Summerhill Waste Management facility for disposal.

RCA concluded that following the remediation works, the site was considered suitable for the proposed development (medium density residential), "given that the residual contaminants at the base of the excavation is minimal in extent and pose no human or ecological risk as the proposed development will further limit exposure pathways."

The Environ Site Audit Report and Site Audit Statement (Ref 11) (Auditor Graeme Nyland) found that the site was suitable for the following uses:

- Residential with minimal opportunity for soil access, including units;
- Secondary school;
- Park, recreational open space, playing field; and
- Commercial / industrial.

In addition, Environ recommended that the groundwater should not be used on site unless it was demonstrated to be suitable for site-specific purposes.

The JBS Material Classification report (Ref 12) classified soils from ground surface to a depth of 3.0 m, based on soil samples collected from ten locations and a total of 20 samples tested in the laboratory. The report distinguished between the upper fill (0 m to 0.5 m) comprising gravelly silty sand and slag, from the lower fill (0.5 m to 3.0 m) described as dredged alluvial sand with shell fragments. Both upper and lower fill materials were classified as 'Inert Waste; with reference to then-current DEC guidelines (2004).

It is noted that the JBS report was conducted in 2007 following site remediation, and prior to construction of the carpark in 2011. Limited testing was conducted by JBS for classification purposes. The scope completed would not satisfy current EPA guidelines for the assessment of waste classification or beneficial re-use opportunities.

Reference should be made to the specific reports for details.

## 3.3 Carpark Construction

A carpark currently occupies the majority of the site area which was constructed in 2011. Based on the information provided, the following is understood regarding the materials used to construct the pavement:

- Basecourse comprised 2% Stabilised DGB20 supplied by SCE Resources (stabilised with 2% SSC40 binder, which is a slag / cement blend). A copy of the letter of 2 September 2014 from SCE (supplier) is included in Appendix D. The letter stated that the materials conformed to RMS Specifications 3051 for pavement construction;
- Recycled 20mm roadbase (2% stabilised) replaced the initially proposed 'decomposed granite' paths.

The materials described above were consistent with those observed within the site (refer to Section 4.2).

### 3.4 Contamination Status of Site

Based on review of the supplied site Audit Statement, Site Audit Report, Site Remediation and Validation Report and the Material Classification Report, the following is understood:

- Contaminated soil and groundwater is present within the site;
- Localised remediation of heavily contaminated upper soils was conducted within the north-west corner of the site (i.e. former Wharf Road alignment associated with coal tar impacted pavement materials); (refer to Drawing 1 in Appendix D showing the former Wharf Road alignment);
- Residual soil contamination is present within the site;
- Groundwater impacts are present, however, remediation of groundwater was considered unnecessary by RCA and the Auditor;
- A preliminary waste classification assessment was conducted in 2007. The NSW EPA waste classification guidelines have since been amended and the 2007 classifications are not valid. The results of testing, however, generally indicated the absence of gross contamination;
- Based on experience with nearby sites, upper fill may contain contaminated soils and anthropogenic inclusions including building rubble and possible asbestos containing materials (ACM).

## 4. Field Work

### 4.1 Field Work Methods

The area subject to this assessment is the full site of approximately 7,230 $m^2$. The proposed bulk excavation level for construction of the basement is about RL -0.3 AHD, requiring excavation depths in the range 2.1 m to 3.2 m.

The rationale for subsurface investigation considered the following:

- Site area (0.72 ha);
- Possible presence of anthropogenic inclusions in upper filling;
- The proposed development including bulk excavation depths for basement construction, and potential requirements for dewatering during construction;
- General requirements for assessment of the materials against relevant NSW EPA Resource Recovery Orders (RRO) and Exemptions (RRE), and NSW Waste Classification Guidelines.

A minimum of 17 sampling points is recommended by the NSW EPA for the assessment of a 0.7 ha site. This sampling frequency was doubled based on the likely presence of anthropogenic inclusions within upper fill materials as recommended in the WA Asbestos Guidelines (Ref 13). This frequency of testing would also assist with the assessment of materials under the relevant RRO's and RRE's.

The field work consisted of the following:

- 34 test bores (Bores 101 to 134), drilled using a 300 mm diameter auger fitted to a small excavator, mostly to depths of up to 3.0 m, with five bores refusing on an obstruction at depths of 1.0 m or less;
- 34 dynamic penetrometer tests (DPT) - one at each bore location, to depths of up to 1.2 m or prior refusal;
- Four bores were drilled to depths of 5 m to 6 m using a truck mounted drilling rig for the installation of groundwater monitoring wells (Bores 103W, 114W, 116W and 130W); the wells comprised Class 18 machine-slotted, machine-threaded PVC with graded gravel filter (backfill) and bentonite seal;
- Nine cone penetration tests (CPTs 201 to 209) to depths ranging from 15.0 m to 27.7 m, mainly for geotechnical purposes, providing information on the stratigraphy at depth;
- Development, purging of groundwater wells and measurement of field groundwater parameters;
- Collection of soil and groundwater samples for laboratory testing (see below);
- Installation of three automatic water level data loggers in groundwater monitoring wells: Bores 103W, 116W and 130W; levels were recorded over the period 20 December 2016 to 23 January 2017, with measurements taken at 10 minute intervals;
- Three rising head permeability tests in three wells (i.e. Bores 103W, 116W and 130W);
- Collection of two surface water samples from the Hunter River (SW1 and HR1) using new dedicated bailers for laboratory testing and measurement of field parameters at the sampling locations.

The test locations are shown on Drawings 1 and 2 in Appendix D.

The field work, logging and environmental sampling was undertaken by geo-environmental engineers from DP. All sampling data was recorded on DP chain-of-custody sheets, and the general sampling procedure comprised:

- Collection of representative soil samples directly from the auger;
- Collection of soil samples at regular depth intervals for ASS assessment. These were placing immediately into zip-lock plastic bags after minimising air content and potential for moisture loss, then storing on ice in a cooled, insulated and sealed container for transport to the laboratory. Once in the laboratory the samples were placed in a freezer;
- The use of disposable gloves for each sampling event;
- Collection of replicate soil samples in zip-lock plastic bags at each depth for photo-ionisation Detector (PID) screening;
- Replicate samples for each soil sample were screened for the presence of volatile organic compounds (VOCs), using a MiniRAE 3000 photo-ionisation detector (PID) with a 10.6 eV lamp, calibrated to 100 ppm Isobutylene;
- Collection of replicate sample(s) for QA/QC purposes;
- Transfer of samples into laboratory-prepared glass jars, capping immediately, minimising the headspace within the sample jar;

- Labelling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- Placing the glass jars into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain of custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain of custody forms (COC) are provided in Appendix C.

During the subsurface investigation, bulk soil samples (10L) were also collected from materials observed to contain anthropogenic inclusions (i.e. possible hazardous building materials including asbestos containing materials (ACM)). The bulk samples underwent sieving with reference to NEPM (2013) (Ref 2) and WA Asbestos Guidelines (Ref 13) to assess the possible presence of ACM.

**Well Design and Installation**

Groundwater wells constructed of 50 mm diameter flush threaded Class 18 PVC were installed in Bores 103, 114, 116 and 130 with reference to current industry standards, using solid flight augers from the truck mounted drilling rig. A machine-slotted PVC screen with an end cap was installed from approximately 0.5 m to 5 m below ground level. A filter pack was installed in the bore annulus consisting of <2 mm graded and washed gravel to generally 0.1 m to 0.2 m above the slotted PVC screen. A bentonite seal was placed above the filter pack within the annulus. The wells were competed at the surface with a flush mounted well cover set in concrete. Details of well design and construction are shown on Borehole logs, Appendix B. Drilling and well installation was undertaken under Quality Assurance / Quality Control (QA/QC) protocols to minimise the risk of cross contamination.

**Well Development/Purging and Sampling**

Following installation, the wells were developed by removing groundwater until steady pH and Electricity Conductivity (EC) readings were achieved using new dedicated single check valve disposable bailers in order to provide an efficient hydraulic connection between the well and the formation. Regular measurements of the above field parameters were undertaken on groundwater during development using a calibrated portable meter until steady readings were achieved. Prior to sampling, the wells were purged until steady pH, EC, Oxidation Reduction Potential (ORP), Dissolved Oxygen (DO), turbidity readings were achieved using a MP10 MicroPurge.

Groundwater samples from the wells were collected using a MP10 MicroPurge low-flow water sampler and were preserved in laboratory prepared containers for analysis. The groundwater level was allowed to recover from the effects of purging prior to sampling. Samples were collected under strict QA/QC protocols.

The headspace of the well and groundwater collected from the well was also screened for the presence of volatile organic compounds (VOC's) using a calibrated Photoionisation Dectector (PID) following purging. Prior to purging, an oil-water interface meter was used to confirm the depth to groundwater in each well for groundwater contouring purposes and to assess the possible presence of floating product within each well.

It is noted that accurate survey of test locations was not conducted. The locations of the bores and CPTs were recorded by measurement from site features and boundaries. The ground surface levels shown on the logs were interpolated from a survey plan supplied by the client and are therefore approximate. The groundwater wells, however, were surveyed for elevation by DP using levelling equipment to assist with groundwater level monitoring.

## 4.2 Field Work Results

### 4.2.1 Site Conditions

The following pertinent site features were observed during a site visit by a Senior Engineer from DP on 13 December 2016:

- Site area predominantly comprised a bitumen sealed carpark (Figure 3);
- Grassed strip within southern site boundary (Figure 3 and 7) eastern boundary and NW corner of site;
- Stabilised crushed concrete strip within western site boundary (Figure 4 and 5) and northern site boundary (Figure 6);
- Exposed soils within grassed areas comprised sandy filling with trace shells, gravel and silt (Figure 9). Minor localised bitumen observed at surface within south-east corner of site (Figure 8).

**Figure 3: Carpark Looking NW (pano)**

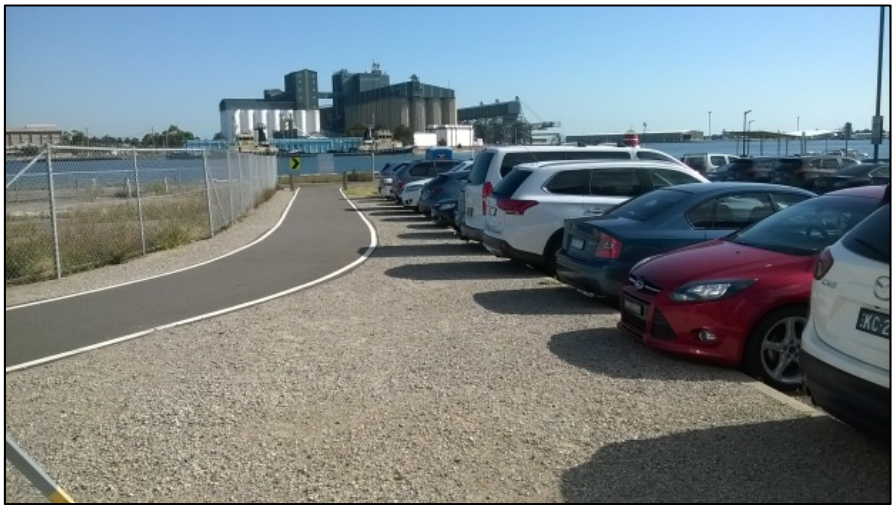

**Figure 4: Western boundary looking north –stabilised crushed concrete strip within site**

**Figure 5: Close up of stabilised crushed concrete**

**Figure 6: Looking east from NW corner of site**

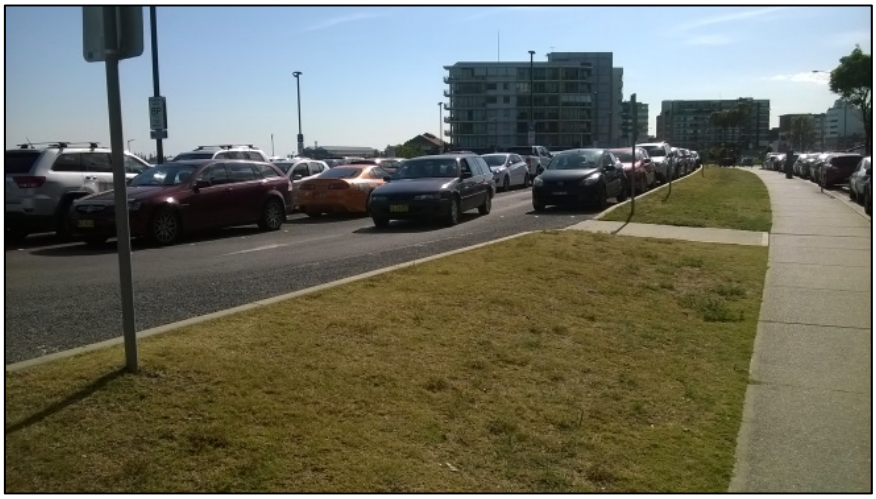

**Figure 7: Looking east from SW corner of site**

**Figure 8: Exposed surface soils comprising sandy filling with some shells and localised bitumen at the surface**

**Figure 9: Exposed soils during recent excavation for service installation comprising sandy filling with some shells**

### 4.2.2 Subsurface Conditions

The borehole logs and CPT charts are provided in Appendix B which should be read in conjunction with the accompanying explanatory notes that define classification methods and terms used to describe the soils. The geotechnical subsurface conditions are summarised below:

**Table 1: Summary of Geotechnical Subsurface Profile**

| Unit | Description | Range at Base of Stratum[1] | |
|---|---|---|---|
| | | Depth (m) | RL (AHD) |
| 1.1 | Upper Fill: pavement materials, gravelly sand, rubble | 0.28 to 2.45 | +2.35 to -0.33 |
| 1.2 | Lower Fill: sand, silty sand, some gravelly sand, | 1.10 to 3.60 | +1.35 to -1.48 |
| 2 | SILTY CLAY/CLAYEY SILT - soft to firm (CPTs 204 & 207 only) | 3.55 - 4.15[2] | -0.70 to -2.05 |
| 3.1 | SAND / SILTY SAND - loose to medium dense | 5.20 to 8.70 | -2.89 to -5.85 |
| 3.2 | SAND - medium dense to dense, very dense in parts | 12.30 to 14.10 | -9.99 to -11.98 |
| 4 | CLAY - stiff to hard, some interbedded sand layers | 22.30 to 27.50 | -19.45 to -23.37 |
| 5 | CPT refusal in Weathered Rock (inferred) | 22.86 to 27.72 - limit of investigation | |

Notes to Table 1:

1. Layers vary in base depth across the site (i.e. not level) hence a range is given.
2. Unit 2 (soft to firm clay) is commonly encountered in alluvial areas of Newcastle but is not prevalent this site.

The upper Unit 1.1 Fill Layer can be further divided into the following sub-units based on potential contamination observations and presence of anthropogenic materials:

- **Unit 1.1A – Pavement Gravels:**
  - Beneath bitumen spray seal (generally 0.01 m thick);
  - From 0.01 m depth to 0.17 / 0.3 m depth;
  - Average thickness of about 0.22 m and up to 0.3 m at bore locations.
- **Unit 1.1B – Fill Containing Anthropogenics:**
  - Present in all bores;
  - From 0.17 / 0.3 m to 0.28 / 1.0 m depth;
  - Average thickness of about 0.35 m and up to 0.8 m thick at bore locations (excluding Bore 102 see below);
  - Generally described as brown gravelly sand with anthropogenic inclusions (slag, concrete, terracotta, concrete, brick, steel, coal, porcelain, glass, plastic, occasional cobbles);
  - Some bores contained gravel in bituminous matrix (possible coal tar?) and fibro fragments (possible asbestos containing materials – ACM) as discussed below in the potential contamination observations;
  - Bore 102 comprised sand filling and clay filling with abundant anthropogenic inclusions (glass, steel, terracotta, brick and plastic refuse) from beneath pavement gravels to 2.7 m depth.
- **Unit 1.1C – Fill Containing Some Anthropogenics:**

- Bores 103, 106, 107, 123, 132 and 133 contained a fill layer beneath Unit 1.1B which generally comprised yellow-brown sand with some / occasional inclusions (slag / concrete fragments);
- From 0.35 / 0.7 m to 0.7 / 1.8 m depth;
- Average thickness of about 0.5 m and up to 1.2 m thick.

Unit 1.2 filling (possible hydraulic filling) generally comprised yellow-brown and yellow-grey sandy fill with some shells from 0.28 / 1.8 m to 1.9 / 3.0 m depth. Occasional gravel / cobble (sandstone, concrete) was observed at some locations within this layer. Although anthropogenic inclusions were generally not observed in this layer within the bores drilled, such inclusions cannot be precluded due to the nature of filling.

Natural soils were observed within the bores from depths 1.9 / 3.0 m and generally comprised yellow-brown-grey sands with some to abundant shells.

It is noted that refusal occurred during drilling in the following bores due to obstructions such as concrete / sandstone cobbles:

- 107 / 1.0 m;
- 112 / 0.6 m;
- 118 / 1.0 m;
- 126 / 2.0 m;
- 132 / 2.0 m.

The presence of possible obstructions within filling, therefore, cannot be precluded.

### 4.2.3 Potential Contamination Observations

The following observations were made in relation to potential soil contamination within the investigation bores:

- **Unit 1.1A – Pavement Gravels:**
  - Presence of slag binder;

- **Unit 1.1B – Fill Containing Anthropogenics:**
  - Anthropogenic inclusions including slag, concrete, brick, steel, coal, porcelain, plastic, etc. (refer to logs);
  - Possible coal tar (gravel in bituminous matrix):
    - Bore 107 (0.28 m to 0.6 m) occasional fragment;
    - Bore 113 (0.6 m);
    - Bore 119 (0.4 m);
    - Bore 129 (0.4 m);
    - Bore 131 (0.3 m and 0.55 m);
    - Bore 132 (0.3 m, 0.45 m and 0.5).
  - Possible asbestos containing materials (ACM):
    - Bore 101 (0.35 m) (fibro fragment);

- Bore 110 (0.4 m) (fibro fragment);
- Bore 127 (0.6 m) (fibro fragment);
- Bore 128 (0.3 m) (fibro fragment).

- The risk of contamination to be present within this layer is considered to be greater due to the observed anthropogenic inclusions described above;
- It is noted that significant refuse was observed in Bore 102 from 0.2 m to 2.7 m depth. Although potential ACM was not observed within the bore, the presence of ACM cannot be precluded due to the observed building rubble which may be associated with potential hazardous building material impacts such as ACM.

- **Unit 1.1C – Fill Containing Some Anthropogenics:**
  - Some / trace slag and concrete fragments.

There were no obvious indications of gross contamination within fill Units 1.1C and 1.2 (i.e. staining / odours). It is noted, however, that the presence of anthropogenic inclusions such as hazardous building materials (i.e. ACM) cannot be precluded due to the nature of fill materials.

There were no obvious indications of gross contamination (i.e. staining / odours) within underlying natural soils from depths of 1.9 / 3.0 m.

The results of PID screening on the soil samples are included on the borehole logs (Appendix B) and suggested the absence of gross volatile hydrocarbon impact (<1ppm).

### 4.2.4 Groundwater

Table 2 presents the groundwater parameters recorded at the time of sampling on 5 January 2016.

**Table 2: Field Measurements of Groundwater at Time of Sampling (05/01/2017)**

| Parameter (Units) | Bore / Well | | | |
|---|---|---|---|---|
| | 103W | 114W | 116W | 130W |
| Reduced Level of Well Collar (AHD) | 2.02 | 2.54 | 2.03 | 2.52 |
| Depth to Groundwater below Well Collar (m) | 1.72 | 2.22 | 1.75 | 2.18 |
| Depth to Groundwater below Ground Level (m) | 1.80 | 2.31 | 1.86 | 2.28 |
| Reduced Level of Groundwater (AHD) | 0.30 | 0.32 | 0.28 | 0.34 |
| PID Well Headspace (ppm) | <1 | <1 | <1 | <1 |
| Thickness of free product (mm) | <1 | <1 | <1 | <1 |
| pH | 5.8 | 7.7 | 7.1 | 7.5 |
| Electrical Conductivity (mS/cm) | 6.8 | 0.98 | 0.86 | 0.79 |
| Redox, Eh (mV) | -85 | -298 | -185 | -187 |
| Colour | Turbid / grey-brown | Turbid / grey-brown | Turbid / grey-brown | Turbid / grey-brown |

The results of groundwater field testing indicated the following:

- Groundwater is slightly acidic to slightly alkaline (i.e. pH 5.8 to 7.7);
- Groundwater is fresh to brackish;
- Reducing conditions were encountered (i.e. Redox potential -85 to -298);
- The results of PID screening on groundwater headspace suggest the absence of volatile hydrocarbon impacts (i.e. <1 ppm);
- Floating product was not detected visually or by the interface meter (i.e. <1 mm);

The groundwater samples collected did not exhibit any obvious indications of gross contamination (e.g. staining or odours).

### 4.2.5 Groundwater Level Monitoring

The groundwater levels were recorded in Bores 103W, 116W and 130W over the period 20 December 2016 to 23 January 2017 (34 days). Figure B1 in Appendix B shows the reduced water levels to AHD plotted against time. The plots also show the corresponding tide levels and rainfall (Nobby's BOM Station), as well as manual gauging checks. The proposed bulk excavation and finished floor levels of the proposed development are also shown for comparison.

The results indicate the following:

- Water levels during the monitoring period were about 0.6 m to 0.8 m above the proposed bulk excavation level. Dewatering will therefore be required during construction;

- There were two moderate rainfall events of about 30 mm during the monitoring period. There was no noticeable response in water level as a result of the rainfall. This is most likely due to the majority of the site being paved; and
- A subdued tidal response in the order of 0.2 m amplitude was apparent, having a time-lag of about 3 to 4 hours relative to the tide.

It is noted that during construction, while the ground is open to rainfall and runoff, there would likely be a more direct groundwater response to rainfall.

It should be noted that groundwater levels are affected by factors such as climatic conditions, soil permeability and tidal movements and will therefore vary with time.

### 4.2.6 In-situ Permeability Tests

The results of the in-situ permeability tests are shown on the report sheets in Appendix B and are summarised in Table 3. In each well three tests were performed; the results show the minima, maxima and mean values recorded.

The permeability was estimated using the Hvorslev method. The permeability values are applicable only to the soil unit corresponding to the well screen interval.

**Table 3: Results of Rising Head Permeability Tests**

| Bore/Well | Well Construction | | | Permeability K (m/s) | | |
|---|---|---|---|---|---|---|
| | Casing Radius (m) | Gravel radius (m) | Screen Interval (m) | Minimum | Maximum | Mean |
| 103W | 0.025 | 0.05 | 0.5 to 5.0 | $2.5 \times 10^{-4}$ | $2.6 \times 10^{-4}$ | $2.5 \times 10^{-4}$ |
| 116W | 0.025 | 0.05 | 0.4 to 5.0 | $2.7 \times 10^{-4}$ | $9.1 \times 10^{-4}$ | $6.4 \times 10^{-4}$ |
| 130W | 0.025 | 0.05 | 0.4 to 5.0 | $2.9 \times 10^{-4}$ | $4.2 \times 10^{-4}$ | $3.3 \times 10^{-4}$ |

Basement excavation will require dewatering. Comments on the water quality in relation to dewatering and management of the extracted groundwater are provided in Section 6.3. Comments on dewatering design and groundwater effects on design are contained in the geotechnical report (Ref 14).

### 4.2.7 Surface Water

The field measurements taken at the two surface water sampling points are shown in Table 4.

**Table 4: Field Measurements of Surface Water at Time of Sampling**

| Parameter (Units) | HR1 | SW1 |
|---|---|---|
| Date | 19/12/2016 | 05/01/2017 |
| pH | 7.5 | 7.1 |
| Electrical Conductivity (mS/cm) | 44.9 | 39.4 |
| Redox, Eh (mV) | +56 | +49 |
| Colour | Clear | Clear |

The results of harbour surface water field testing indicated the following:

- The harbour water sampled is neutral to slightly alkaline (i.e. pH 7.1 to 7.5);
- The harbour water is saline;
- Oxidising conditions were encountered (i.e. Redox potential +49 to +56);
- The results of PID screening on surface water headspace suggests the absence of volatile hydrocarbon impacts (i.e. <1 ppm).

Surface water sample SW1 was collected immediately downgradient of the subject site (i.e. receiving waters from the site).

Surface water sample HR1 was collected approximately 100 m west of the site as shown on Drawing 2 in Appendix D. HR1 waters were utilised as the extraction fluid (i.e. leachant) to assess the leachability characteristics of soils using Hunter River water.

# 5. Laboratory Testing

## 5.1 Programme of Testing

The laboratory testing programme comprised the following:

- Testing of 98 soil samples, including 7 replicate samples, for the purposes of waste classification;
- Leachability testing as follows:
  - 17 TCLP for waste classification purposes;
  - 37 ASLP for assessment for re-use below the water table adjacent to the Hunter River.
- ASS screening on selected soil samples;
- Chromium-reducible sulphur suite (detailed acid sulfate testing) on one soil sample;
- Asbestos identification testing:
  - six tests on soil;
  - six tests on possible ACM (i.e. fibro fragments);
- Foreign materials testing on 23 soil samples;
- Testing of five groundwater samples (one from each of the site wells plus one replicate sample);

- Testing of two surface water samples - one from the Hunter River to the north of the subject site (SW1), and one from the Hunter River about 100 m west of the site (HR1).

The above tests were performed by Envirolab Services Pty Ltd, a NATA-accredited chemical laboratory, with the exception of acid soil screening and foreign materials testing which were conducted in the DP laboratory.

The soil samples were tested for the following suite of analytes:

- pH / EC;
- Metals (As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn and Fe);
- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethyl-benzene and Xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Polychlorinated Biphenyls (PCB) – selected samples;
- Organochlorine Pesticides (OCP) – selected samples; and
- Organophosphate Pesticides (OPP) – selected samples.

Analysis of additional heavy metals (i.e. Be, B, Mo, Se), was conducted on selected soil samples that were observed to contain slag materials within filling.

Previous site investigations generally indicated the absence of PCB / OCP / OPP impacts in soils at the site. Selected samples were analysed for PCB / OCP / OPP for completeness.

Potential ACM (i.e. fibro fragments) were tested for asbestos identification. Soils associated with the observed fibro fragments were also tested for asbestos identification in soil.

Sieving of 10 L bulk soil samples were conducted on 23 samples (i.e. soils observed to contain anthropogenic inclusions) for the assessment of possible ACM. These samples were also tested for foreign materials for classification purposes.

Coal tar identification testing was also conducted on 4 samples observed to contain bituminous materials within filling.

Following receipt of total contaminant test results, additional acid leachability testing (TCLP) was conducted for PAH (i.e. B(a)P) and Pb on selected soil samples for classification purposes.

Leachability testing for the assessment of seawall suitability comprised TRH, metals, PAH using a distilled water leach (i.e. ASLP), and a Hunter River water leach (i.e. HR1 was utilised as the leachant in the test to approximate site conditions should the soils be considered for re-use beneath the water table adjacent to the Hunter River). Additional heavy metals (Be, B, Mo, Se) were tested for leachability in selected samples due to the observed presence of slag materials in filling.

## 5.2 Results of Total Contaminant Tests on Soil

The results of chemical testing are presented in Tables to 5 to 8. The tables have been set up for each of the subsurface units identified within the site.

The results have been compared to the following guidelines in order to assess the contamination status and possible re-use / disposal options for the various materials encountered:

- NEPM (2013) (Ref 2):
  - HIL B (Residential with minimal soil access);
  - HIL C (Recreational);
  - HIL D (Commercial).
- NSW EPA Waste Classification Guidelines (Ref 3)
- Relevant Resource Recovery Orders:
  - Excavated Natural Materials (ENM) (Ref 5);
  - Recovered Aggregate (Ref 15);
  - Slag (blast furnace), (Ref 17).

The recreational human health investigation levels were considered in order to assess possible beneficial use on areas utilised for recreational landuse.

The results of foreign materials testing are included in Table 5 to Table 8 to assist with the classification of the soils. The laboratory report sheets are provided in Appendix C.

The Recovered Aggregate Order was considered for pavement gravels, together with the slag (blast furnace) Order due to the use of SSC40 (slag / cement) binder within pavement gravels.

**Table 5: Results of Soil Testing - Unit 1.1A - Pavement Gravels**

| Analytes | Units | PQL | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSWEPA - Recovered Aggregate RRO 2014 - Abs Max | NSWEPA - Recovered Aggregate RRO 2014 - Max Av | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NSWEPA - Blast Furnace Slag RRO 2014 - Abs Max | NSWEPA - Blast Furnace Slag RRO 2014 - Max Av | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID | 106 | 111 | 117 | 123 | 127 | 132 | Maximum Concentration | Average Concentration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | Sample Depth | 0.1 | 0.1 | 0.1 | 0.1 | 0.05 | 0.05 | | |
| | | | | | | | | | | | | | | | | | | | | | | Sample Date | 20/12/2016 | 19/12/2016 | 20/12/2016 | 19/12/2016 | 16/12/2016 | 15/12/2016 | | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | | 3000 | 1500 | | | | | | | | | | | | | | | | | | 190 | 220 | 220 | 270 | 200 | 210 | 270 | 218 |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | | | | 4.5 | 5.4 | 5.9 | 5 | 4.7 | 6.6 | 6.6 | 5.4 |
| pH 1:5 soil:water1:5 soil:water | pH Units | | | | | | | | | | | | 7 - 13 | 7.5 - 12.5 | | | | | | | | | 9.4 | 9.4 | 9.4 | 9.3 | 9.5 | 9.4 | 9.5 | 9.4 |
| Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 100 | 40 | 20 | 500 | 300 | 3000 | | | | | 10 | 5 | 100 | 160 | | | | | | | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 2 |
| Beryllium | mg/kg | 1 | 20 | | | 90 | 90 | 500 | | | | | 20 | 10 | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Boron | mg/kg | 3 | | | | 40000 | 20000 | 300000 | | | | | | | | | | | | | | | 7 | 9 | 8 | 10 | 7 | 6 | 10 | 7.8 |
| Cadmium | mg/kg | 0.4 | 20 | 1.5 | 0.5 | 150 | 90 | 900 | | | | | 1 | 0.5 | | | | | | | | | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | 0.2 |
| Chromium (III+VI) | mg/kg | 1 | 100 | 120 | 60 | 500 | 300 | 3600 | | | | | 100 | 50 | 160 | 260 | | | | | | | 31 | 34 | 30 | 32 | 24 | 33 | 34 | 31 |
| Copper | mg/kg | 1 | | 150 | 60 | 30000 | 17000 | 240000 | | | | | 20 | 10 | 65 | 80 | | | | | | | 26 | 33 | 24 | 27 | 22 | 28 | 33 | 27 |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | | 24,000 | 27,000 | 22,000 | 25,000 | 18,000 | 28,000 | 28000 | 24000 |
| Lead | mg/kg | 1 | 100 | 150 | 75 | 1200 | 600 | 1500 | | | | | 20 | 10 | 1100 | 1800 | | | | | | | 3 | 4 | 4 | 3 | 2 | 3 | 4 | 3.2 |
| Manganese | mg/kg | 1 | | | | 14000 | 19000 | 60000 | | | | | | | | | | | | | | | 360 | 500 | 370 | 430 | 380 | 480 | 500 | 420 |
| Mercury | mg/kg | 0.1 | 4 | 1 | 0.5 | 120 | 80 | 730 | | | | | 1 | 0.5 | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Molybdenum | mg/kg | 1 | 100 | | | | | | | | | | 10 | 5 | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Nickel | mg/kg | 1 | 40 | 80 | 40 | 1200 | 1200 | 6000 | | | | | 20 | 10 | 9 | 10 | | | | | | | 19 | 21 | 18 | 20 | 15 | 21 | 21 | 19 |
| Selenium | mg/kg | 2 | 20 | | | 1400 | 700 | 10000 | | | | | 5 | 2 | | | | | | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1 |
| Zinc | mg/kg | 1 | | 350 | 200 | 60000 | 30000 | 400000 | | | | | 50 | 25 | 230 | 300 | | | | | | | 33 | 40 | 33 | 36 | 28 | 39 | 40 | 35 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | | **1000** | 1000 | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | | 300 | 1700 | **2500** | 3500 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | | 2800 | 3300 | **10000** | 10000 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | 110 | 240 | 440 | NL | | | | | 120 | 170 | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6 - C9 | mg/kg | 25 | 650 | | | | | | | | | | | | | | | | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| +C10 - C36 (Sum of total) | mg/kg | | 10000 | | | | | | | | | | | | | | | | | | | | <250 | <250 | <250 | <250 | <250 | <250 | <250 | 125 |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | 45 | 70 | 110 | 200 | | | | | 180 | 215 | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | | **700** | 700 | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 10 | | | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | | | 50 | 75 | | | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.1 |
| Ethylbenzene | mg/kg | 1 | 600 | | | | | | 55 | NL | NL | NL | | | | | 70 | 165 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Toluene | mg/kg | 0.5 | 288 | | | | | | 160 | 220 | 310 | 540 | | | | | 85 | 135 | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1 |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Xylene Total | mg/kg | 1 | 1000 | | | | | | 40 | 60 | 95 | 170 | | | | | 105 | 180 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 200 | | | 400 | 300 | 4000 | | | | | | | | | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.025 |
| Acenaphthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Acenaphthylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Benz(a)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Benzo(a) pyrene | mg/kg | 0.05 | 0.8 | | | 4 | 3 | 40 | | | | | | | | | 0.7 | 1.4 | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.025 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | 4 | 3 | 40 | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | | | | 4 | 3 | 40 | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | | | | | | | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | | | | | | | | | | | | | | | | | | | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 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 | 0.05 |
| Chrysene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Fluoranthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Fluorene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 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 | 0.05 |
| Naphthalene | mg/kg | 0.1 | | | | | | | 3 | NL | NL | NL | | | 170 | 370 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Phenanthrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | 49.9999 | | | 1 | 1 | 7 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1016 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1221 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1232 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1242 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1248 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1254 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1260 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | 60 | | | 400 | 340 | 2000 | | | | | | | | | | | | | | | <0.3 | - | <0.3 | - | - | <0.3 | <0.3 | 0.15 |
| 4,4-DDE | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| a-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Aldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Aldrin + Dieldrin | mg/kg | | | | | 10 | 10 | 45 | | | | | | | | | | | | | | | <0.2 | - | <0.2 | - | - | <0.2 | <0.2 | 0.1 |
| b-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Chlordane (cis) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Chlordane (trans) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| d-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| DDD | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | | 180 | 640 | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | 600 | 400 | 3600 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Dieldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Endosulfan I | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Endosulfan II | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Endosulfan sulphate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Endrin | mg/kg | 0.1 | | | | 20 | 20 | 100 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Endrin aldehyde | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| g-BHC (Lindane) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Heptachlor | mg/kg | 0.1 | | | | 10 | 10 | 50 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Heptachlor epoxide | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Hexachlorobenzene | mg/kg | 0.1 | | | | 15 | 10 | 80 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Methoxychlor | mg/kg | 0.1 | | | | 500 | 400 | 2500 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Bromophos-ethyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Chlorpyrifos | mg/kg | 0.1 | 4 | | | 340 | 250 | 2000 | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Chlorpyrifos-methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Diazinon | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Dichlorvos | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Dimethoate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Ethion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Fenitrothion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Malathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Ronnel | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | 250 | | | | | | | | | | | | | | | | | | | | <0.6 | - | <0.6 | - | - | <0.6 | <0.6 | 0.3 |
| Pesticides (total, NSW Waste 2014) | mg/kg | | | | | | | | | | | | | | | | | | | | | | <0.6 | - | <0.6 | - | - | <0.6 | <0.6 | 0.3 |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | 49.999 | | | | | | | | | | | | | | | | | | | | <1.3 | - | <1.3 | - | - | <1.3 | <1.3 | 0.65 |
| Parathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | 0.05 |

Notes to Table:
D - Detected, ND - Not Detected

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**Table 6: Results of Soil Testing - Unit 1.1B-C Fill with Anthropogenics**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSLs for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil |
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**Table 6: Results of Soil Testing - Unit 1.1B-C Fill with Anthropogenics**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID | 114 | 115 | 116 | 117 | 118 | 119 - Bitumen | 119 | 121 | 122 | 123 | 127- Fibro | 127 | 128 - Fibro | 128- Fibro | 128 | 128 | 129 - Bitumen | 129 | 130 | 131 | 132 - Bitumen | 132 | 133 | 134 | 134 | Maximum Concentration | Average Concentration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | Sample Depth | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.7 | 0.6 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.45 | 0.4 | 0.4 | 0.4 | 1.4 | | |
| | | | | | | | | | | | | | | | | | | | | | Sample Date | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 16/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | | |
| Coal Tar | - | | | | | | | | | | | | | | | | | | | | | - | - | - | - | ND | - | - | - | - | - | ND | - | - | - | ND | - | - | - | - | 0 | 0 |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 3000 | 1500 | | | | | | | | | | | | | | | | | | 78 | 150 | 130 | 220 | 130 | - | 150 | 150 | 130 | 98 | - | 43 - 67 | - | - | 150 | - | - | 140 | 120 | 110 | - | 150 | 200 | 140 | 71 | 220 | 119 |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | | | 5 | 5.2 | 5.8 | 8.1 | 4.1 | - | 7.2 | 5.8 | 13 | 17 | - | 1.5 - 3.9 | - | - | 7.6 | - | - | 7.7 | 15 | 3.4 | - | 13 | 6 | 4.4 | 3.7 | 17 | 6.6 |
| pH 1:5 soil:water1:5 soil:water | pH Units | | 4.5-10 | 5-9 | | | | | | | | | | | | | | | | | | 9.3 | 9.4 | 9 | 8.9 | 9.3 | - | 8.4 | 9.5 | 8.9 | 8.6 | - | 8.9 - 9.4 | - | - | 8 | - | - | 8.9 | 8.9 | 9 | - | 8.9 | 8.2 | 8.4 | 8.7 | 9.6 | 9 |
| Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 40 | 20 | 100 | 400 | 500 | 300 | 3000 | | | | | 100 | 160 | | | | | | | 4 | 4 | 5 | 11 | 7 | - | 17 | 4 | 16 | <4 | - | <4 - 6 | - | - | 7 | - | - | 20 | 5 | <4 | - | 9 | 7 | 7 | 4 | 20 | 6 |
| Beryllium | mg/kg | 1 | | | 20 | 80 | 90 | 90 | 500 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | |
| Boron | mg/kg | 3 | | | | | 40000 | 20000 | 300000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 9 | |
| Cadmium | mg/kg | 0.4 | 1 | 0.5 | 20 | 80 | 150 | 90 | 900 | | | | | | | | | | | | | 0.5 | 1 | <0.4 | 2 | 0.6 | - | 2 | <0.4 | 7.3 | <0.4 | - | <0.4 - 0.8 | - | - | 0.9 | - | - | 1 | <0.4 | <0.4 | - | <0.4 | 2 | 1 | 4.8 | 7.3 | 0.89 |
| Chromium (III+VI) | mg/kg | 1 | 150 | 75 | 100 | 400 | 500 | 300 | 3600 | | | | | 160 | 260 | | | | | | | 6 | 16 | 8 | 10 | 12 | - | 14 | 17 | 46 | 3 | - | 2 - 96 | - | - | 9 | - | - | 16 | 10 | 2 | - | 14 | 11 | 9 | 7 | 96 | 13 |
| Copper | mg/kg | 1 | 200 | 100 | | | 30000 | 17000 | 240000 | | | | | 65 | 80 | | | | | | | 28 | 34 | 37 | 110 | 170 | - | 160 | 38 | 310 | 7 | - | 2 - 18 | - | - | 83 | - | - | 220 | 26 | 17 | - | 67 | 76 | 71 | 30 | 310 | 57 |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | 5600 | 14,000 | 9100 | 19,000 | 14,000 | - | 17,000 | 15,000 | 33,000 | 2700 | - | 1200 - 8700 | - | - | 10,000 | - | - | 28,000 | 8000 | 3200 | - | 15,000 | 14,000 | 12,000 | 14,000 | 33000 | 11688 |
| Lead | mg/kg | 1 | 100 | 50 | 100 | 400 | 1200 | 600 | 1500 | | | | | 1100 | 1800 | | | | | | | 46 | 72 | 46 | 200 | 160 | - | 180 | 44 | 510 | 11 | - | 1 - 43 | - | - | 100 | - | - | 160 | 55 | 17 | - | 51 | 69 | 120 | 130 | 510 | 80 |
| Manganese | mg/kg | 1 | | | | | 14000 | 19000 | 60000 | | | | | | | | | | | | | 140 | 480 | 310 | 940 | 290 | - | 460 | 1300 | 1400 | 58 | - | 11 - 220 | - | - | 270 | - | - | 490 | 180 | 140 | - | 320 | 440 | 260 | 110 | 1400 | 326 |
| Mercury | mg/kg | 0.1 | 1 | 0.5 | 4 | 16 | 120 | 80 | 730 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | - | 0.1 | <0.1 | 0.1 | <0.1 | - | <0.1 | - | - | 0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.061 |
| Molybdenum | mg/kg | 1 | | | 100 | 400 | | | | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | |
| Nickel | mg/kg | 1 | 60 | 30 | 40 | 160 | 1200 | 1200 | 6000 | | | | | 9 | 10 | | | | | | | 7 | 11 | 8 | 14 | 9 | - | 11 | 10 | 17 | 2 | - | <1 - 6 | - | - | 8 | - | - | 15 | 10 | 4 | - | 11 | 20 | 7 | 5 | 21 | 8.6 |
| Selenium | mg/kg | 2 | | | 20 | 80 | 1400 | 700 | 10000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <2 | |
| Zinc | mg/kg | 1 | 300 | 150 | | | 60000 | 30000 | 400000 | | | | | 230 | 300 | | | | | | | 130 | 280 | 95 | 500 | 180 | - | 310 | 91 | 2600 | 29 | - | 6 - 380 | - | - | 260 | - | - | 200 | 110 | 65 | - | 150 | 430 | 300 | 400 | 2600 | 241 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | | | 1000 | 1000 | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | 310 | <50 | - | <50 | - | - | <50 | - | - | <50 | <50 | <50 | - | <50 | <50 | <50 | <50 | 310 | 33 |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | 300 | 1700 | 2500 | 3500 | | | <100 | <100 | <100 | 370 | 110 | - | <100 | <100 | 2800 | <100 | - | <100 | - | - | 150 | - | - | <100 | <100 | <100 | - | <100 | <100 | 200 | <100 | 2800 | 145 |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | 2800 | 3300 | 10000 | 10000 | | | <100 | <100 | <100 | <100 | <100 | - | <100 | <100 | 450 | <100 | - | <100 | - | - | <100 | - | - | <100 | <100 | <100 | - | <100 | <100 | <100 | <100 | 450 | 61 |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | | 110 | 240 | 440 | NL | | | 120 | 170 | | | | | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | 310 | <50 | - | <50 | - | - | <50 | - | - | <50 | <50 | <50 | - | <50 | <50 | <50 | <50 | 310 | 33 |
| C6 - C9 | mg/kg | 25 | | | 650 | 2600 | | | | | | | | | | | | | | | | <25 | <25 | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | - | <25 | - | - | <25 | - | - | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | <25 | 13 |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | 110 | <50 | - | <50 | - | - | <50 | - | - | <50 | <50 | <50 | - | <50 | <50 | <50 | <50 | 110 | 27 |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | 240 | <100 | - | <100 | <100 | 2300 | <100 | - | <100 | - | - | <100 | - | - | <100 | <100 | <100 | - | <100 | <100 | <100 | <100 | 2300 | 118 |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | 180 | <100 | - | <100 | <100 | 890 | <100 | - | <100 | - | - | <100 | - | - | <100 | <100 | <100 | - | <100 | <100 | 200 | <100 | 890 | 82 |
| +C10 - C36 (Sum of total) | mg/kg | | 500 | 250 | 10000 | 40000 | | | | | | | | | | | | | | | | <250 | <250 | <250 | 445 | <250 | - | <250 | <250 | 3300 | <250 | - | <250 | - | - | <250 | - | - | <250 | <250 | <250 | - | <250 | <250 | 275 | <250 | 3300 | 227 |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | 370 | 110 | - | <50 | <50 | 3500 | <50 | - | <50 | - | - | 150 | - | - | <50 | <50 | <50 | - | <50 | <50 | 200 | <50 | 3500 | 143 |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | | 45 | 70 | 110 | 200 | | | 180 | 215 | | | | | <25 | <25 | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | - | <25 | - | - | <25 | - | - | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | <25 | 13 |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | | | 700 | 700 | <25 | <25 | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | - | <25 | - | - | <25 | - | - | <25 | <25 | <25 | - | <25 | <25 | <25 | <25 | <25 | 13 |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 0.5 | | 10 | 40 | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | 50 | 75 | | | | | <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 | 0.1 |
| Ethylbenzene | mg/kg | 1 | 25 | | 600 | 2400 | | | | 55 | NL | NL | NL | | | 70 | 165 | | | | | <1 | <1 | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | - | <1 | - | - | <1 | - | - | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Toluene | mg/kg | 0.5 | 65 | | 288 | 1152 | | | | 160 | 220 | 310 | 540 | | | 85 | 135 | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | | | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | <2 | <2 | - | <2 | - | - | <2 | - | - | <2 | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | 1 |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | - | <1 | - | - | <1 | - | - | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Xylene Total | mg/kg | 1 | 15 | | 1000 | 4000 | | | | 40 | 60 | 95 | 170 | | | 105 | 180 | | | | | <1 | <1 | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | - | <1 | - | - | <1 | - | - | <1 | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | 0.5 |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 40 | 20 | 200 | 800 | 400 | 300 | 4000 | | | | | | | | | | | | | 8.1 | 5.3 | 4.5 | 67 | 40 | - | 20 | 11 | 1200 | 4.8 | - | 0.3 - 21 | - | - | 38 | - | - | 11 | 7 | 18 | - | 5.3 | 13 | 12 | 2.4 | 1200 | 47 |
| Acenaphthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | 0.7 | 0.2 | - | <0.1 | <0.1 | 50 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | 50 | 1.4 |
| Acenaphthylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | 0.3 | 0.4 | - | 0.2 | 0.1 | <0.1 | <0.1 | - | <0.1 - 0.1 | - | - | 0.5 | - | - | 0.1 | 0.1 | 0.3 | - | <0.1 | 0.1 | 0.2 | <0.1 | 0.5 | 0.12 |
| Anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.1 | 0.1 | <0.1 | 1.9 | 0.9 | - | 0.3 | 0.2 | 62 | 0.1 | - | <0.1 - 0.4 | - | - | 0.9 | - | - | 0.2 | 0.2 | 0.5 | - | 0.1 | 0.3 | 0.4 | <0.1 | 62 | 2 |
| Benz(a)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.7 | 0.4 | 0.4 | 4.4 | 3.2 | - | 1.6 | 0.9 | 80 | 0.4 | - | <0.1 - 1.7 | - | - | 2.8 | - | - | 0.9 | 0.4 | 1.1 | - | 0.3 | 0.8 | 0.7 | 0.1 | 80 | 3.2 |
| Benzo(a) pyrene | mg/kg | 0.05 | 1 | 0.5 | 0.8 | 3.2 | 4 | 3 | 40 | | | | | | | 0.7 | 1.4 | | | | | 0.65 | 0.4 | 0.4 | 3.6 | 2.8 | - | 1.6 | 0.88 | 47 | 0.3 | - | 0.05 - 1.7 | - | - | 3 | - | - | 0.84 | 0.53 | 1.2 | - | 0.5 | 1 | 0.84 | 0.2 | 47 | 2.3 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | 0.9 | 0.6 | 0.5 | 5.2 | 4.1 | - | 2.4 | 1.3 | 75 | <0.5 | - | <0.5 - 2.6 | - | - | 4.5 | - | - | 1.3 | 0.7 | 1.8 | - | 0.6 | 1.5 | 1.3 | <0.5 | 75 | 3.6 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | 0.9 | 0.6 | 0.5 | 5.2 | 4.1 | - | 2.4 | 1.3 | 75 | <0.5 | - | <0.5 - 2.6 | - | - | 4.5 | - | - | 1.3 | 0.7 | 1.8 | - | 0.6 | 1.5 | 1.3 | <0.5 | 75 | 3.6 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | | | | | | | | | | | | | | | | | | | | 0.9 | 0.6 | 0.5 | 5.2 | 4.1 | - | 2.4 | 1.3 | 75 | <0.5 | - | <0.5 - 2.6 | - | - | 4.5 | - | - | 1.3 | 0.7 | 1.8 | - | 0.6 | 1.5 | 1.3 | <0.5 | 75 | 3.6 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | | | | | | | | | | | | | | | | | | | | 1 | 0.8 | 0.7 | 6.5 | 4.7 | - | 2.9 | 2 | 94 | 0.6 | - | <0.2 - 3.1 | - | - | 5.1 | - | - | 2 | 0.8 | 2 | - | 0.8 | 2 | 1 | 0.3 | 94 | 4.4 |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.5 | 0.4 | 0.3 | 3.1 | 1.8 | - | 1.2 | 0.7 | 33 | 0.2 | - | <0.1 - 1.4 | - | - | 2.7 | - | - | 0.7 | 0.5 | 1.2 | - | 0.4 | 1 | 0.8 | 0.2 | 33 | 1.7 |
| Chrysene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.7 | 0.5 | 0.4 | 4.5 | 2.6 | - | 1.5 | 0.9 | 63 | 0.4 | - | <0.1 - 1.7 | - | - | 2.3 | - | - | 1 | 0.6 | 1.3 | - | 0.5 | 1.1 | 0.9 | 0.2 | 63 | 2.7 |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | 0.2 | 0.4 | - | 0.2 | 0.1 | 7.3 | <0.1 | - | <0.1 - 0.2 | - | - | 0.4 | - | - | 0.1 | <0.1 | 0.2 | - | <0.1 | 0.2 | 0.2 | <0.1 | 7.3 | 0.33 |
| Fluoranthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 1.6 | 1 | 0.9 | 15 | 8.6 | - | 3.9 | 2.3 | 250 | 1.1 | - | 0.1 - 4.2 | - | - | 7.3 | - | - | 2 | 1.4 | 3.9 | - | 1 | 2.4 | 2.7 | 0.5 | 250 | 9.6 |
| Fluorene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | 0.6 | 0.2 | - | <0.1 | <0.1 | 28 | <0.1 | - | <0.1 | - | - | 0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | 28 | 0.83 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.4 | 0.3 | 0.3 | 2.5 | 1.5 | - | 0.9 | 0.5 | 29 | 0.2 | - | <0.1 - 1.1 | - | - | 2 | - | - | 0.5 | 0.4 | 0.9 | - | 0.3 | 0.8 | 0.6 | 0.1 | 29 | 1.5 |
| Naphthalene | mg/kg | 0.1 | | | | | 3 | NL | NL | NL | | | | 170 | 370 | | | | | | | <0.1 | <0.1 | <0.1 | <1 - 0.4 | <1 - 0.1 | - | <0.1 | <0.1 | <1 - 15 | <0.1 | - | <0.1 | - | - | <1 - 0.2 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | 15 | 0.3 |
| Phenanthrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 0.5 | 0.4 | 0.3 | 9.1 | 4.7 | - | 1.3 | 1 | 230 | 0.3 | - | <0.1 - 1.6 | - | - | 3.4 | - | - | 0.7 | 0.5 | 1.5 | - | 0.3 | 0.5 | 1 | 0.1 | 230 | 7.4 |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | 1.6 | 1 | 0.9 | 13 | 7.9 | - | 3.9 | 2.3 | 210 | 1 | - | 0.1 - 3.9 | - | - | 7.3 | - | - | 1.9 | 1.4 | 3.8 | - | 1 | 2.4 | 2.6 | 0.5 | 210 | 8.4 |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | | | 49.9999 | 49.9999 | 1 | 1 | 7 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Arochlor 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 | 0.05 |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | | | 60 | 240 | 400 | 340 | 2000 | | | | | | | | | | | | | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | - | <0.3 | <0.3 | <0.3 | <0.3 | - | <0.3 | - | - | <0.3 | - | - | <0.3 | <0.3 | <0.3 | - | <0.3 | - | - | - | <0.3 | 0.15 |
| 4,4-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 | 0.05 |
| a-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 | 0.05 |
| Aldrin | 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 | 0.05 |
| Aldrin + Dieldrin | mg/kg | | | | | | 10 | 10 | 45 | | | | | | | | | | | | | <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 | 0.1 |
| b-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 | 0.05 |
| Chlordane (cis) | 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 | 0.052 |
| Chlordane (trans) | 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 | 0.052 |
| d-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 | 0.05 |
| 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 | 0.05 |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | 180 | 640 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | | 600 | 400 | 3600 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| Dieldrin | 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 | 0.05 |
| Endosulfan I | 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 | 0.05 |
| Endosulfan II | 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 | 0.05 |
| Endosulfan sulphate | 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 | 0.05 |
| Endrin | mg/kg | 0.1 | | | | | 20 | 20 | 100 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| 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 | 0.05 |
| g-BHC (Lindane) | 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 | 0.05 |
| Heptachlor | mg/kg | 0.1 | | | | | 10 | 10 | 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 | 0.05 |
| 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 | 0.05 |
| Hexachlorobenzene | mg/kg | 0.1 | | | | | 15 | 10 | 80 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| Methoxychlor | mg/kg | 0.1 | | | | | 500 | 400 | 2500 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | - | - | <0.1 | 0.05 |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos 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 | 0.05 |
| 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 | 0.05 |
| Chlorpyrifos | mg/kg | 0.1 | | | 4

**Table 7: Results of Soil Testing - Unit 1.2 - Sand Fill**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSLs for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID | 101 | 104 | D16 | 105 | 106 | 108 | D17 | 109 | 110 | 111 | 113 | 114 | D13 | 115 | 116 | 117 | 119 | 120 | 121 | 122 | D7 | 122 | 123 | D14 | 124 | 125 | D6 | 125 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | Sample Depth | 0.45 | 0.55 | 0.55 | 1 | 1.5 | 1 | 1 | 1 | 2.2 | 1.3 | 0.9 | 0.55 | 0.55 | 1 | 2 | 1 | 0.7 | 0.3 | 1.5 | 0.6 | 0.6 | 1.4 | 1.9 | 1.9 | 0.6 | 0.5 | 0.5 | 1.5 |
| | | | | | | | | | | | | | | | | | | | | | | Sample Date | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 3000 | 1500 | | | | | | | | | | | | | | | | | | 45 | 71 | - | 55 | 50 | 55 | - | 52 | 56 | 110 | 36 | 58 | 43 | 48 | 45 | 50 | 42 | 70 | 68 | 44 | 51 | 47 | 50 | - | 63 | 55 | 56 | 56 |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | | | 1.9 | 2 | 2.7 | 2.2 | 2.5 | 2.4 | 1.9 | 2.5 | 12 | 4.4 | 2.3 | 1.7 | 3.2 | 2.8 | 15 | 1.1 | 4 | 5.5 | 4.2 | 1.6 | 2.4 | 5.5 | 2.7 | 4.8 | 1.9 | 1.3 | 1.7 | 4.4 |
| pH 1:5 soil:water1:5 soil:water | pH Units | | 4.5-10 | 5-9 | | | | | | | | | | | | | | | | | | 9.5 | 9.3 | - | 9.2 | 9.3 | 9.2 | - | 9.2 | 9.4 | 9.4 | 9.4 | 9.3 | 9.5 | 9.3 | 9.2 | 8.8 | 9.4 | 9.4 | 9.4 | 9.1 | 9.1 | 9.3 | 9.2 | - | 9.1 | 9.3 | 9.3 | 9.3 |
| Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 40 | 20 | 100 | 400 | 500 | 300 | 3000 | | | | | 100 | 160 | | | | | | | <4 | 5 | <4 | 6 | <4 | <4 | <4 | <4 | 4 | <4 | <4 | <4 | 4 | 5 | <4 | 4 | <4 | <4 | <4 | 5 | 5 | <4 | <4 | <4 | <4 | 4 | 4 | 5 |
| Beryllium | mg/kg | 1 | | | 20 | 80 | 90 | 90 | 500 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Boron | mg/kg | 3 | | | | | 40000 | 20000 | 300000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cadmium | mg/kg | 0.4 | 1 | 0.5 | 20 | 80 | 150 | 90 | 900 | | | | | | | | | | | | | <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 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium (III+VI) | mg/kg | 1 | 150 | 75 | 100 | 400 | 500 | 300 | 3600 | | | | | 160 | 260 | | | | | | | 1 | 3 | 2 | 2 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 |
| Copper | mg/kg | 1 | 200 | 100 | | | 30000 | 17000 | 240000 | | | | | 65 | 80 | | | | | | | <1 | 8 | 4 | 4 | 2 | 1 | <1 | 2 | 2 | <1 | 2 | <1 | <1 | 1 | 5 | <1 | 4 | 6 | <1 | 18 | 10 | 11 | 1 | 1 | <1 | 1 | <1 |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | 1300 | 3800 | 1500 | 1600 | 1400 | 1500 | 1300 | 1500 | 1500 | 1100 | 1200 | 1600 | 1400 | 1000 | 1600 | 1000 | 1200 | 2300 | 1000 | 1500 | 1800 | 1100 | 2100 | 2000 | 1800 | 1300 | 1500 | 1400 |
| Lead | mg/kg | 1 | 100 | 50 | 100 | 400 | 1200 | 600 | 1500 | | | | | 1100 | 1800 | | | | | | | 2 | 15 | 4 | 19 | 3 | 2 | 1 | 3 | 3 | <1 | 5 | <1 | <1 | 1 | <1 | 4 | 1 | 4 | 8 | <1 | 8 | 12 | 1 | 8 | 7 | 12 | 1 | 1 | 1 |
| Manganese | mg/kg | 1 | | | | | 14000 | 19000 | 60000 | | | | | | | | | | | | | 15 | 93 | 18 | 57 | 22 | 15 | 12 | 22 | 20 | 8 | 16 | 12 | 13 | 12 | 12 | 13 | 29 | 46 | 8 | 39 | 50 | 12 | 37 | 40 | 33 | 13 | 18 | 16 |
| Mercury | mg/kg | 0.1 | 1 | 0.5 | 4 | 16 | 120 | 80 | 730 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Molybdenum | mg/kg | 1 | | | 100 | 400 | | | | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Nickel | mg/kg | 1 | 60 | 30 | 40 | 160 | 1200 | 1200 | 6000 | | | | | 9 | 10 | | | | | | | <1 | 3 | 1 | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | 2 | <1 | <1 | 1 | <1 | 2 | 2 | 2 | <1 | 1 | <1 | 1 | <1 |
| Selenium | mg/kg | 2 | | | 20 | 80 | 1400 | 700 | 10000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | 1 | 300 | 150 | | | 60000 | 30000 | 400000 | | | | | 230 | 300 | | | | | | | 4 | 32 | 9 | 37 | 20 | 4 | 3 | 10 | 10 | 3 | 16 | 2 | 2 | 3 | 4 | 36 | 3 | 24 | 1 | 75 | 110 | 3 | 26 | 20 | 43 | 3 | 4 | 3 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | **1000** | 1000 | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | 300 | 1700 | **2500** | 3500 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | 2800 | 3300 | **10000** | 10000 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | | 110 | 240 | 440 | NL | | | 120 | 170 | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| C6 - C9 | mg/kg | 25 | | | 650 | 2600 | | | | | | | | | | | | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| +C10 - C36 (Sum of total) | mg/kg | | 500 | 250 | 10000 | 40000 | | | | | | | | | | | | | | | | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | | 45 | 70 | 110 | 200 | | | 180 | 215 | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | **700** | 700 | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 0.5 | | 10 | 40 | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | 50 | 75 | | | | | <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 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Ethylbenzene | mg/kg | 1 | 25 | | 600 | 2400 | | | | 55 | NL | NL | NL | | | 70 | 165 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Toluene | mg/kg | 0.5 | 65 | | 288 | 1152 | | | | 160 | 220 | 310 | 540 | | | 85 | 135 | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Xylene Total | mg/kg | 1 | 15 | | 1000 | 4000 | | | | 40 | 60 | 95 | 170 | | | 105 | 180 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 40 | 20 | 200 | 800 | 400 | 300 | 4000 | | | | | | | | | | | | | <0.05 | 0.4 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 6.7 | 0.2 | <0.05 | 0.3 | <0.05 | <0.05 | <0.05 | <0.05 | 0.3 | 4 | <0.05 | 24 | 5.7 | <0.05 | 2 | 2.3 | 2.2 | <0.05 | <0.05 | <0.05 | <0.05 |
| 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 | 0.3 | <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 | <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 | 0.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 1.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benz(a)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | 1.6 | 0.4 | <0.1 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benzo(a) pyrene | mg/kg | 0.05 | 1 | 0.5 | 0.8 | 3.2 | 4 | 3 | 40 | | | | | | | 0.7 | 1.4 | | | | | <0.05 | 0.06 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.3 | <0.05 | <0.05 | 0.07 | <0.05 | <0.05 | <0.05 | <0.05 | 0.06 | 0.3 | <0.05 | 1.9 | 0.5 | <0.05 | 0.1 | 0.2 | 0.2 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.6 | <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 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.6 | <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 | | | | | | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | | | | | | | | | | | | | | | | | | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.5 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.5 | <0.2 | 2.8 | 0.8 | <0.2 | 0.3 | 0.3 | 0.3 | <0.2 | <0.2 | <0.2 | <0.2 |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 1.3 | 0.4 | <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 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.4 | <0.1 | 1.5 | 0.5 | <0.1 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dibenz(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 | 0.2 | <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 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 1.4 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.9 | 0.5 | 4.5 | 1.2 | <0.1 | 0.4 | 0.5 | 0.5 | <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 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 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 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 1.1 | 0.3 | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Naphthalene | mg/kg | 0.1 | | | | | | | | 3 | NL | NL | NL | 170 | 370 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <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 | 1.7 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.4 | <0.1 | 3 | 0.3 | <0.1 | 0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 1.3 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.7 | <0.1 | 4.1 | 1.1 | <0.1 | 0.4 | 0.5 | 0.5 | <0.1 | <0.1 | <0.1 | <0.1 |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | | | 49.9999 | 49.9999 | 1 | 1 | 7 | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1016 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1221 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1232 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1242 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1248 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1254 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Arochlor 1260 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | | | 60 | 240 | 400 | 340 | 2000 | | | | | | | | | | | | | - | <0.3 | - | - | - | - | - | - | - | - | - | - | - | - | <0.3 | - | - | <0.3 | <0.3 | - | - | - | <0.3 | - | - | <0.3 | <0.3 | - | - |
| 4,4-DDE | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| a-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Aldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Aldrin + Dieldrin | mg/kg | | | | | | 10 | 10 | 45 | | | | | | | | | | | | | - | <0.2 | - | - | - | - | - | - | - | - | - | - | - | - | <0.2 | - | - | <0.2 | <0.2 | - | - | - | <0.2 | - | - | <0.2 | <0.2 | - | - |
| b-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Chlordane (cis) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Chlordane (trans) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| d-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| DDD | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | 180 | 640 | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | | 600 | 400 | 3600 | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Dieldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Endosulfan I | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Endosulfan II | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Endosulfan sulphate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Endrin | mg/kg | 0.1 | | | | | 20 | 20 | 100 | | | | | | | | | | | | | - | <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 | - | - |
| g-BHC (Lindane) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Heptachlor | mg/kg | 0.1 | | | | | 10 | 10 | 50 | | | | | | | | | | | | | - | <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 | - | - |
| Hexachlorobenzene | mg/kg | 0.1 | | | | | 15 | 10 | 80 | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Methoxychlor | mg/kg | 0.1 | | | | | 500 | 400 | 2500 | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 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 | - | - |
| Chlorpyrifos | mg/kg | 0.1 | | | 4 | 16 | 340 | 250 | 2000 | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - |
| Chlorpyrifos-methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | - | <0.1 | - | - | - | - | - | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | - | - | - | 

**Table 7: Results of Soil Testing - Unit 1.2 - Sand Fill**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSLs for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID | 126 | 126 | 128 | 128 | 129 | D15 | 130 | 131 | 132 | 133 | 133 | Maximum Concentration | Average Concentration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | Sample Depth | 0.5 | 1.8 | 0.6 | 1.5 | 0.6 | 0.6 | 1.2 | 1.5 | 1.5 | 1.3 | 2.1 | | |
| | | | | | | | | | | | | | | | | | | | | | Sample Date | 15/12/2016 | 15/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 19/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 3000 | 1500 | | | | | | | | | | | | | | | | | | 43 | 88 | 68 | 49 | 46 | - | 94 | 62 | 70 | 94 | 62 | 110 | 59 |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | | | 4.7 | 15 | 3 | 2.9 | 2.3 | 2.6 | 3.6 | 3.7 | 6 | 2.9 | 20 | 20 | 4.3 |
| pH 1:5 soil:water1:5 soil:water | pH Units | | 4.5-10 | 5-9 | | | | | | | | | | | | | | | | | | 9.5 | 9 | 9.2 | 9.4 | 9.1 | - | 9 | 9.4 | 9.3 | 9.1 | 9.3 | 9.5 | 9.3 |
| Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 40 | 20 | 100 | 400 | 500 | 300 | 3000 | | | | | 100 | 160 | | | | | | | <4 | 4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 6 | 2.7 |
| Beryllium | mg/kg | 1 | | | 20 | 80 | 90 | 90 | 500 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0 | |
| Boron | mg/kg | 3 | | | | | 40000 | 20000 | 300000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0 | |
| Cadmium | mg/kg | 0.4 | 1 | 0.5 | 20 | 80 | 150 | 90 | 900 | | | | | | | | | | | | | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | 0.2 |
| Chromium (III+VI) | mg/kg | 1 | 150 | 75 | 100 | 400 | 500 | 300 | 3600 | | | | | 160 | 260 | | | | | | | 1 | 8 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 8 | 1.7 |
| Copper | mg/kg | 1 | 200 | 100 | | | 30000 | 17000 | 240000 | | | | | 65 | 80 | | | | | | | <1 | 180 | 2 | <1 | 2 | 1 | 10 | <1 | <1 | 1 | <1 | 180 | 7.4 |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | 1400 | 6600 | 1400 | 1300 | 1200 | 1200 | 2100 | 930 | 1300 | 1400 | 970 | 6600 | 1618 |
| Lead | mg/kg | 1 | 100 | 50 | 100 | 400 | 1200 | 600 | 1500 | | | | | 1100 | 1800 | | | | | | | 1 | 9 | 1 | 1 | 3 | 2 | 11 | <1 | 1 | 1 | 2 | 19 | 3.9 |
| Manganese | mg/kg | 1 | | | | | 14000 | 19000 | 60000 | | | | | | | | | | | | | 10 | 110 | 18 | 11 | 11 | 11 | 32 | 10 | 12 | 12 | 8 | 110 | 24 |
| Mercury | mg/kg | 0.1 | 1 | 0.5 | 4 | 16 | 120 | 80 | 730 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Molybdenum | mg/kg | 1 | | | 100 | 400 | | | | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0 | |
| Nickel | mg/kg | 1 | 60 | 30 | 40 | 160 | 1200 | 1200 | 6000 | | | | | 9 | 10 | | | | | | | <1 | 7 | <1 | <1 | 1 | <1 | 1 | <1 | <1 | 2 | <1 | 7 | 1 |
| Selenium | mg/kg | 2 | | | 20 | 80 | 1400 | 700 | 10000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | - | 0 | |
| Zinc | mg/kg | 1 | 300 | 150 | | | 60000 | 30000 | 400000 | | | | | 230 | 300 | | | | | | | 2 | 45 | 3 | 3 | 12 | 8 | 23 | 2 | 4 | 14 | 4 | 110 | 16 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | **1000** | 1000 | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | 300 | 1700 | **2500** | 3500 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | 2800 | 3300 | **10000** | 10000 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | | 110 | 240 | 440 | NL | | | 120 | 170 | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6 - C9 | mg/kg | 25 | | | 650 | 2600 | | | | | | | | | | | | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| +C10 - C36 (Sum of total) | mg/kg | | 500 | 250 | 10000 | 40000 | | | | | | | | | | | | | | | | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | 125 |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | | 45 | 70 | 110 | 200 | | | 180 | 215 | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | **700** | 700 | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 0.5 | | 10 | 40 | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | 50 | 75 | | | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.1 |
| Ethylbenzene | mg/kg | 1 | 25 | | 600 | 2400 | | | | 55 | NL | NL | NL | | | 70 | 165 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Toluene | mg/kg | 0.5 | 65 | | 288 | 1152 | | | | 160 | 220 | 310 | 540 | | | 85 | 135 | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1 |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Xylene Total | mg/kg | 1 | 15 | | 1000 | 4000 | | | | 40 | 60 | 95 | 170 | | | 105 | 180 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 40 | 20 | 200 | 800 | 400 | 300 | 4000 | | | | | | | | | | | | | <0.05 | 0.85 | <0.05 | 0.1 | <0.05 | <0.05 | 1.4 | <0.05 | 2.4 | 0.91 | <0.05 | 24 | 1.4 |
| 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 | 0.3 | 0.056 |
| 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 | 0.051 |
| 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 | 1.1 | 0.088 |
| Benz(a)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | 1.6 | 0.13 |
| Benzo(a) pyrene | mg/kg | 0.05 | 1 | 0.5 | 0.8 | 3.2 | 4 | 3 | 40 | | | | | | | 0.7 | 1.4 | | | | | <0.05 | 0.09 | <0.05 | <0.05 | <0.05 | <0.05 | 0.09 | <0.05 | 0.1 | 0.08 | <0.05 | 1.9 | 0.12 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.32 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.32 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | | | | | | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | 0.32 |
| 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 | 0.3 | <0.2 | <0.2 | 2.8 | 0.23 |
| 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 | 1.3 | 0.1 |
| Chrysene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 0.2 | 0.1 | <0.1 | 1.5 | 0.14 |
| Dibenz(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 | 0.2 | 0.054 |
| Fluoranthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | 0.2 | <0.1 | 0.1 | <0.1 | <0.1 | 0.4 | <0.1 | 0.5 | 0.3 | <0.1 | 4.5 | 0.32 |
| 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 | 0.2 | 0.055 |
| 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 | 1.1 | 0.096 |
| Naphthalene | mg/kg | 0.1 | | | | | | | | 3 | NL | NL | NL | 170 | 370 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Phenanthrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 0.2 | <0.1 | <0.1 | 3 | 0.2 |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.4 | <0.1 | 0.5 | 0.3 | <0.1 | 4.1 | 0.3 |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | | | 49.9999 | 49.9999 | 1 | 1 | 7 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1016 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1221 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1232 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1242 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1248 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1254 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Arochlor 1260 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | | | 60 | 240 | 400 | 340 | 2000 | | | | | | | | | | | | | <0.3 | - | - | - | - | - | <0.3 | <0.3 | <0.3 | - | - | <0.3 | 0.15 |
| 4,4-DDE | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| a-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Aldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Aldrin + Dieldrin | mg/kg | | | | | | 10 | 10 | 45 | | | | | | | | | | | | | <0.2 | - | - | - | - | - | <0.2 | <0.2 | <0.2 | - | - | <0.2 | 0.1 |
| b-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Chlordane (cis) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Chlordane (trans) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| d-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| DDD | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | 180 | 640 | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | | 600 | 400 | 3600 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Dieldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Endosulfan I | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Endosulfan II | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Endosulfan sulphate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Endrin | mg/kg | 0.1 | | | | | 20 | 20 | 100 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Endrin aldehyde | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| g-BHC (Lindane) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Heptachlor | mg/kg | 0.1 | | | | | 10 | 10 | 50 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Heptachlor epoxide | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Hexachlorobenzene | mg/kg | 0.1 | | | | | 15 | 10 | 80 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Methoxychlor | mg/kg | 0.1 | | | | | 500 | 400 | 2500 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Bromophos-ethyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Chlorpyrifos | mg/kg | 0.1 | | | 4 | 16 | 340 | 250 | 2000 | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Chlorpyrifos-methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Diazinon | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Dichlorvos | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Dimethoate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Ethion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Fenitrothion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Malathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Ronnel | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | | | 250 | 1000 | | | | | | | | | | | | | | | | <0.6 | - | - | - | - | - | <0.6 | <0.6 | <0.6 | - | - | <0.6 | 0.3 |
| Pesticides (total, NSW Waste 2014) | mg/kg | | | | | | | | | | | | | | | | | | | | | <0.6 | - | - | - | - | - | <0.6 | <0.6 | <0.6 | - | - | <0.6 | 0.3 |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | | | 49.999 | 49.999 | | | | | | | | | | | | | | | | <1.3 | - | - | - | - | - | <1.3 | <1.3 | <1.3 | - | - | <1.3 | 0.65 |
| Parathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | <0.1 | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | <0.1 | 0.05 |

Notes to Table:

**Table 7: Results of Soil Testing - Unit 1.2 - Sand Fill**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand | | | | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 0-1m | 1-2m | 2-4m | >4m | | | | | | | Sample Depth |
| | | | | | | | | | | | | | | | | | | | | Sample Date |
| Inorganics | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 3000 | 1500 | | | | | | | | | | | | | | | | |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | |
| pH 1:5 soil:water1:5 soil:water | pH Units | | 4.5-10 | 5-9 | | | | | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 40 | 20 | 100 | 400 | 500 | 300 | 3000 | | | | | 100 | 160 | | | | | |
| Beryllium | mg/kg | 1 | | | 20 | 80 | 90 | 90 | 500 | | | | | | | | | | | |
| Boron | mg/kg | 3 | | | | | 40000 | 20000 | 300000 | | | | | | | | | | | |
| Cadmium | mg/kg | 0.4 | 1 | 0.5 | 20 | 80 | 150 | 90 | 900 | | | | | | | | | | | |
| Chromium (III+VI) | mg/kg | 1 | 150 | 75 | 100 | 400 | 500 | 300 | 3600 | | | | | 160 | 260 | | | | | |
| Copper | mg/kg | 1 | 200 | 100 | | | 30000 | 17000 | 240000 | | | | | 65 | 80 | | | | | |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | |
| Lead | mg/kg | 1 | 100 | 50 | 100 | 400 | 1200 | 600 | 1500 | | | | | 1100 | 1800 | | | | | |
| Manganese | mg/kg | 1 | | | | | 14000 | 19000 | 60000 | | | | | | | | | | | |
| Mercury | mg/kg | 0.1 | 1 | 0.5 | 4 | 16 | 120 | 80 | 730 | | | | | | | | | | | |
| Molybdenum | mg/kg | 1 | | | 100 | 400 | | | | | | | | | | | | | | |
| Nickel | mg/kg | 1 | 60 | 30 | 40 | 160 | 1200 | 1200 | 6000 | | | | | 9 | 10 | | | | | |
| Selenium | mg/kg | 2 | | | 20 | 80 | 1400 | 700 | 10000 | | | | | | | | | | | |
| Zinc | mg/kg | 1 | 300 | 150 | | | 60000 | 30000 | 400000 | | | | | 230 | 300 | | | | | |
| TPH | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | **1000** | 1000 | |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | 300 | 1700 | **2500** | 3500 | |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | 2800 | 3300 | **10000** | 10000 | |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | | 110 | 240 | 440 | NL | | | 120 | 170 | | | |
| C6 - C9 | mg/kg | 25 | | | 650 | 2600 | | | | | | | | | | | | | | |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | |
| +C10 - C36 (Sum of total) | mg/kg | | 500 | 250 | 10000 | 40000 | | | | | | | | | | | | | | |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | | 45 | 70 | 110 | 200 | | | 180 | 215 | | | |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | **700** | 700 | |
| BTEX | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 0.5 | | 10 | 40 | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | 50 | 75 | | | |
| Ethylbenzene | mg/kg | 1 | 25 | | 600 | 2400 | | | | 55 | NL | NL | NL | | | 70 | 165 | | | |
| Toluene | mg/kg | 0.5 | 65 | | 288 | 1152 | | | | 160 | 220 | 310 | 540 | | | 85 | 135 | | | |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | |
| Xylene Total | mg/kg | 1 | 15 | | 1000 | 4000 | | | | 40 | 60 | 95 | 170 | | | 105 | 180 | | | |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 40 | 20 | 200 | 800 | 400 | 300 | 4000 | | | | | | | | | | | |
| Acenaphthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Acenaphthylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Benz(a)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Benzo(a) pyrene | mg/kg | 0.05 | 1 | 0.5 | 0.8 | 3.2 | 4 | 3 | 40 | | | | | | | 0.7 | 1.4 | | | |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | | | | | 4 | 3 | 40 | | | | | | | | | | | |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | | | | | | | | | | | | | | | | | | |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Chrysene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Fluorene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Naphthalene | mg/kg | 0.1 | | | | | | | | 3 | NL | NL | NL | 170 | 370 | | | | | |
| Phenanthrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | | | 49.9999 | 49.9999 | 1 | 1 | 7 | | | | | | | | | | | |
| Arochlor 1016 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1221 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1232 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1242 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1248 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1254 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Arochlor 1260 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | | | 60 | 240 | 400 | 340 | 2000 | | | | | | | | | | | |
| 4,4-DDE | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| a-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Aldrin + Dieldrin | mg/kg | | | | | | 10 | 10 | 45 | | | | | | | | | | | |
| b-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Chlordane (cis) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Chlordane (trans) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| d-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| DDD | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | 180 | 640 | | | | | |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | | 600 | 400 | 3600 | | | | | | | | | | | |
| Dieldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Endosulfan I | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Endosulfan II | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Endosulfan sulphate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Endrin | mg/kg | 0.1 | | | | | 20 | 20 | 100 | | | | | | | | | | | |
| Endrin aldehyde | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| g-BHC (Lindane) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Heptachlor | mg/kg | 0.1 | | | | | 10 | 10 | 50 | | | | | | | | | | | |
| Heptachlor epoxide | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Hexachlorobenzene | mg/kg | 0.1 | | | | | 15 | 10 | 80 | | | | | | | | | | | |
| Methoxychlor | mg/kg | 0.1 | | | | | 500 | 400 | 2500 | | | | | | | | | | | |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Bromophos-ethyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Chlorpyrifos | mg/kg | 0.1 | | | 4 | 16 | 340 | 250 | 2000 | | | | | | | | | | | |
| Chlorpyrifos-methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Diazinon | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Dichlorvos | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Dimethoate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Ethion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Fenitrothion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Malathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Ronnel | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | | | 250 | 1000 | | | | | | | | | | | | | | |
| Pesticides (total, NSW Waste 2014) | mg/kg | | | | | | | | | | | | | | | | | | | |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | | | 49.999 | 49.999 | | | | | | | | | | | | | | |
| Parathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | |

Notes to Table:

**Table 8: Results of Soil Testing - Unit 2 - Natural**

| Analytes | Units | PQL | ENM RRO 2014 - Abs Max | ENM RRO 2014 - Max Av | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - General Solid Waste SCC1 (using TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste SCC2 (using TCLP) | NEPM 2013 Table 1A(1) HILs Res B Soil | NEPM 2013 Table 1A(1) HILs Rec C Soil | NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil | NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand 0-1m | 1-2m | 2-4m | >4m | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 EILs Comm/Ind Aged | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil | NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil | Field_ID | 108 | 109 | 111 | 117 | 119 | 120 | 124 | 127 | 129 | 130 | Maximum Concentration | Average Concentration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | Sample Depth | 2.9 | 3 | 2.5 | 3 | 2.4 | 2.3 | 2.7 | 2.7 | 2.7 | 2.9 | | |
| | | | | | | | | | | | | | | | | | | | | | | | Sample Date | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 19/12/2016 | 15/12/2016 | | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 3000 | 1500 | | | | | | | | | | | | | | | | | | | | 120 | 70 | 170 | - | 38 | 46 | 49 | 83 | 53 | 150 | 170 | 87 |
| Moisture | % | 0.1 | | | | | | | | | | | | | | | | | | | | | | 33 | 15 | 16 | 17 | 11 | 18 | 13 | 17 | 17 | 20 | 33 | 18 |
| pH 1:5 soil:water1:5 soil:water | pH Units | | 4.5-10 | 5-9 | | | | | | | | | | | | | | | | | | | | 8.7 | 9.1 | 9.2 | - | 9.4 | 9.4 | 9.4 | 9.2 | 9.2 | 8.5 | 9.4 | 9.1 |
| Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 40 | 20 | 100 | 500 | 400 | 2000 | 500 | 300 | 3000 | | | | | 100 | 160 | | | | | | | 8 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 4 | 8 | 2.8 |
| Beryllium | mg/kg | 1 | | | 20 | 100 | 80 | 400 | 90 | 90 | 500 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | 0 | |
| Boron | mg/kg | 3 | | | | | | | 40000 | 20000 | 300000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | 0 | |
| Cadmium | mg/kg | 0.4 | 1 | 0.5 | 20 | 100 | 80 | 400 | 150 | 90 | 900 | | | | | | | | | | | | | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | 0.2 |
| Chromium (III+VI) | mg/kg | 1 | 150 | 75 | 100 | 1900 | 400 | 7600 | 500 | 300 | 3600 | | | | | 160 | 260 | | | | | | | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 1.9 |
| Copper | mg/kg | 1 | 200 | 100 | | | | | 30000 | 17000 | 240000 | | | | | 65 | 80 | | | | | | | 11 | 2 | 1 | <1 | <1 | <1 | 2 | <1 | <1 | 21 | 21 | 4 |
| Iron | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | | | 5300 | 1700 | 1600 | 980 | 1100 | 1100 | 1500 | 1000 | 1100 | 4900 | 5300 | 2028 |
| Lead | mg/kg | 1 | 100 | 50 | 100 | 1500 | 400 | 6000 | 1200 | 600 | 1500 | | | | | 1100 | 1800 | | | | | | | 7 | 4 | 2 | 1 | <1 | <1 | 3 | <1 | 1 | 12 | 12 | 3.2 |
| Manganese | mg/kg | 1 | | | | | | | 14000 | 19000 | 60000 | | | | | | | | | | | | | 50 | 19 | 18 | 9 | 6 | 7 | 17 | 7 | 11 | 46 | 50 | 19 |
| Mercury | mg/kg | 0.1 | 1 | 0.5 | 4 | 50 | 16 | 200 | 120 | 80 | 730 | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| Molybdenum | mg/kg | 1 | | | 100 | 1000 | 400 | 4000 | | | | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | 0 | |
| Nickel | mg/kg | 1 | 60 | 30 | 40 | 1050 | 160 | 4200 | 1200 | 1200 | 6000 | | | | | 9 | 10 | | | | | | | 4 | 1 | 1 | <1 | <1 | <1 | <1 | <1 | 1 | 5 | 5 | 1.5 |
| Selenium | mg/kg | 2 | | | 20 | 50 | 80 | 200 | 1400 | 700 | 10000 | | | | | | | | | | | | | - | - | - | - | - | - | - | - | - | - | 0 | |
| Zinc | mg/kg | 1 | 300 | 150 | | | | | 60000 | 30000 | 400000 | | | | | 230 | 300 | | | | | | | 18 | 11 | 5 | 6 | 1 | 2 | 7 | 1 | 3 | 26 | 26 | 8 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | | | | | | | | | | | | | | | | | | **1000** | 1000 | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C16-C34 | mg/kg | 100 | | | | | | | | | | | | | | | | 300 | 1700 | **2500** | 3500 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C34-C40 | mg/kg | 100 | | | | | | | | | | | | | | | | 2800 | 3300 | **10000** | 10000 | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| F2-NAPHTHALENE | mg/kg | 50 | | | | | | | | | | 110 | 240 | 440 | NL | | | 120 | 170 | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6 - C9 | mg/kg | 25 | | | 650 | | 2600 | 2600 | | | | | | | | | | | | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C10 - C14 | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C15 - C28 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| C29-C36 | mg/kg | 100 | | | | | | | | | | | | | | | | | | | | | | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 | 50 |
| +C10 - C36 (Sum of total) | mg/kg | | 500 | 250 | 10000 | | 40000 | 40000 | | | | | | | | | | | | | | | | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | <250 | 125 |
| C10 - C40 (Sum of total) | mg/kg | 50 | | | | | | | | | | | | | | | | | | | | | | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | 25 |
| C6-C10 less BTEX (F1) | mg/kg | 25 | | | | | | | | | | 45 | 70 | 110 | 200 | | | 180 | 215 | | | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| C6-C10 | mg/kg | 25 | | | | | | | | | | | | | | | | | | **700** | 700 | | | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 13 |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | 0.5 | | 10 | 18 | 40 | 72 | | | | 0.5 | 0.5 | 0.5 | 0.5 | | | 50 | 75 | | | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.1 |
| Ethylbenzene | mg/kg | 1 | 25 | | 600 | 1080 | 2400 | 4320 | | | | 55 | NL | NL | NL | | | 70 | 165 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Toluene | mg/kg | 0.5 | 65 | | 288 | 518 | 1152 | 2073 | | | | 160 | 220 | 310 | 540 | | | 85 | 135 | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Xylene (m & p) | mg/kg | 2 | | | | | | | | | | | | | | | | | | | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 1 |
| Xylene (o) | mg/kg | 1 | | | | | | | | | | | | | | | | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| Xylene Total | mg/kg | 1 | 15 | | 1000 | 1800 | 4000 | 7200 | | | | 40 | 60 | 95 | 170 | | | 105 | 180 | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 0.5 |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 40 | 20 | 200 | 200 | 800 | 800 | 400 | 300 | 4000 | | | | | | | | | | | | | 0.83 | 0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 1.3 | 1.3 | 1.3 | 0.24 |
| 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 | 0.05 |
| 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 | 0.05 |
| 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 | 0.05 |
| Benz(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 | 0.06 |
| Benzo(a) pyrene | mg/kg | 0.05 | 1 | 0.5 | 0.8 | 10 | 3.2 | 23 | 4 | 3 | 40 | | | | | | | 0.7 | 1.4 | | | | | 0.07 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.1 | 0.1 | 0.037 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | | | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | | | | | | | 4 | 3 | 40 | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | | | | | | | | | | | | | | | | | | | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.25 |
| 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 | 0.11 |
| 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 | 0.05 |
| Chrysene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.065 |
| Dibenz(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 | 0.05 |
| Fluoranthene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | 0.3 | 0.3 | 0.095 |
| 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 | 0.05 |
| 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 | 0.05 |
| Naphthalene | mg/kg | 0.1 | | | | | | | | | | 3 | NL | NL | NL | 170 | 370 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.05 |
| 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 | 0.055 |
| Pyrene | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | 0.3 | 0.3 | 0.1 |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | | | 49.9999 | 49.999 | 49.9999 | 49.999 | 1 | 1 | 7 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1016 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1221 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1232 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1242 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1248 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1254 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Arochlor 1260 | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | | | 60 | 108 | 240 | 432 | 400 | 340 | 2000 | | | | | | | | | | | | | <0.3 | <0.3 | - | - | - | - | - | <0.3 | - | <0.3 | <0.3 | 0.15 |
| 4,4-DDE | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| a-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Aldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Aldrin + Dieldrin | mg/kg | | | | | | | | 10 | 10 | 45 | | | | | | | | | | | | | <0.2 | <0.2 | - | - | - | - | - | <0.2 | - | <0.2 | <0.2 | 0.1 |
| b-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Chlordane (cis) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Chlordane (trans) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| d-BHC | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| DDD | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| DDT | mg/kg | 0.1 | | | | | | | | | | | | | | 180 | 640 | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| DDT+DDE+DDD | mg/kg | 0.1 | | | | | | | 600 | 400 | 3600 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Dieldrin | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Endosulfan I | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Endosulfan II | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Endosulfan sulphate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Endrin | mg/kg | 0.1 | | | | | | | 20 | 20 | 100 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Endrin aldehyde | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| g-BHC (Lindane) | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Heptachlor | mg/kg | 0.1 | | | | | | | 10 | 10 | 50 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Heptachlor epoxide | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Hexachlorobenzene | mg/kg | 0.1 | | | | | | | 15 | 10 | 80 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Methoxychlor | mg/kg | 0.1 | | | | | | | 500 | 400 | 2500 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Bromophos-ethyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Chlorpyrifos | mg/kg | 0.1 | | | 4 | 7.5 | 16 | 30 | 340 | 250 | 2000 | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Chlorpyrifos-methyl | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Diazinon | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Dichlorvos | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Dimethoate | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Ethion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Fenitrothion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Malathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Ronnel | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | | | 250 | | 1000 | | | | | | | | | | | | | | | | | <0.6 | <0.6 | - | - | - | - | - | <0.6 | - | <0.6 | <0.6 | 0.3 |
| Pesticides (total, NSW Waste 2014) | mg/kg | | | | | | | | | | | | | | | | | | | | | | | <0.6 | <0.6 | - | - | - | - | - | <0.6 | - | <0.6 | <0.6 | 0.3 |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | | | 49.999 | 49.999 | 49.999 | 49.999 | | | | | | | | | | | | | | | | <1.3 | <1.3 | - | - | - | - | - | <1.3 | - | <1.3 | <1.3 | 0.65 |
| Parathion | mg/kg | 0.1 | | | | | | | | | | | | | | | | | | | | | | <0.1 | <0.1 | - | - | - | - | - | <0.1 | - | <0.1 | <0.1 | 0.05 |

Notes to Table:

## 5.3 Results of Leachability Tests on Soil

The results of leachability testing are presented in Table 9, and include the following:

- TCLP testing on selected soils for waste classification purposes;
- ASLP testing (using distilled water leachant) and leachability testing using Hunter River water leachant (HR1) in order to assess the leachability characteristics of soils for possible use below the groundwater table adjacent to the Hunter River.

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## Table 9: Results of Leachability Testing

| Fill UNIT | Sample | Depth (m) | PID | Metals | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Arsenic (As) | | | | Cadmium (Cd) | | | | Chromium (Cr) | | | | Copper (Cu) | | | | Nickel (Ni) | | | | Lead (Pb) | | | |
| | | | | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach |
| | | | | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (mg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) |
| 1.1B | 101 | 0.35 | <1 | 7 | - | - | - | <0.4 | - | - | - | 32 | - | - | - | 44 | - | - | - | 19 | - | - | - | 71 | - | - | - |
| 1.1B | 107 | 0.4 | <1 | <4 | - | - | - | <0.4 | - | - | - | 18 | - | - | - | 34 | - | - | - | 11 | - | - | - | 110 | <0.03 | - | - |
| 1.1B | 109 | 0.4 | <1 | 6 | - | 7 | 4 | 1 | - | 0.2 | 5.9 | 10 | - | 2 | <1 | 43 | - | 10 | 4 | 8 | - | 2 | 2 | 89 | - | 19 | <1 |
| 1.1B | 110 | 0.4 | <1 | 8 | - | - | - | 0.6 | - | - | - | 8 | - | - | - | 82 | - | - | - | 7 | - | - | - | 96 | - | - | - |
| 1.1B | 111 | 0.3 | <1 | 5 | - | 8 | 3 | <0.4 | - | 0.2 | 1.1 | 10 | - | 3 | <1 | 47 | - | 30 | 6 | 8 | - | 4 | 2 | 30 | - | 33 | <1 |
| 1.1B | 112 | 0.4 | <1 | 7 | - | - | - | 2 | - | - | - | 13 | - | - | - | 99 | - | - | - | 11 | - | - | - | 140 | - | - | - |
| 1.1B | 113 | 0.3 | <1 | 5 | - | 6 | 2 | 2 | - | 0.6 | 7.6 | 26 | - | 9 | <1 | 46 | - | 17 | 3 | 12 | - | 2 | 1 | 130 | 0.04 | 57 | 1 |
| 1.1B | 117 | 0.4 | <1 | 11 | - | 9 | 4 | 2 | - | 0.4 | 2.5 | 10 | - | 2 | 2 | 110 | - | 39 | 15 | 14 | - | 2 | 2 | 200 | <0.03 | 27 | 1 |
| 1.1B | 118 | 0.3 | <1 | 7 | - | 9 | 3 | 0.6 | - | 0.3 | 1.8 | 12 | - | 3 | <1 | 170 | - | 110 | 10 | 9 | - | 3 | 1 | 160 | 0.04 | 100 | 2 |
| 1.1B | 119 | 0.3 | <1 | 17 | - | | | 2 | - | - | - | 14 | - | - | - | 160 | - | - | - | 11 | - | - | - | 180 | <0.03 | - | - |
| 1.1B | 121 | 0.3 | <1 | 4 | - | 4 | 3 | <0.4 | - | 1 | 1.2 | 17 | - | 1 | <1 | 38 | - | 4 | 3 | 10 | - | 1 | 1 | 44 | - | 20 | 1 |
| 1.1B | 122 | 0.3 | <1 | 16 | - | 9 | 2 | 7.3 | - | 1.8 | 27 | 46 | - | 8 | 5 | 310 | - | 78 | 20 | 17 | - | 4 | 3 | 510 | 0.2 | 110 | 7 |
| 1.1B | 127 | 0.6 | <1 | <4-6 | - | 3 | 2 | <4-0.8 | - | <0.1 | 0.2 | 2.0-96 | - | 3 | <1 | 2.0-18 | - | 5 | 2 | <1-6 | - | 1 | 5 | 1.0-43 | - | 3 | <1 |
| 1.1B | 128 | 0.3 | <1 | 7 | - | 4 | 2 | 0.9 | - | 0.2 | 8 | 9 | - | 2 | <1 | 83 | - | 18 | 7 | 8 | - | 1 | 2 | 100 | <0.03 | 39 | <1 |
| 1.1B | 129 | 0.3 | <1 | 20 | - | - | - | 1 | - | - | - | 16 | - | - | - | 220 | - | - | - | 15 | - | - | - | 160 | 0.03 | - | - |
| 1.1B | 131 | 0.4 | <1 | <4 | - | - | - | <0.4 | - | - | - | 2 | - | - | - | 17 | - | - | - | 4 | - | - | - | 17 | - | - | - |
| 1.1B | 133 | 0.4 | <1 | 7 | - | 7 | 3 | 2 | - | 0.3 | 5.7 | 11 | - | 4 | <1 | 76 | - | 28 | 4 | 20 | - | 5 | 2 | 69 | | 25 | <1 |
| 1.1B | 134 | 0.4 | <1 | 7 | - | 7 | 2 | 1 | - | 0.3 | 5.3 | 9 | - | 4 | <1 | 71 | - | 33 | 5 | 7 | - | 4 | <1 | 120 | 0.06 | 59 | 1 |
| 1.1C | 107 | 0.7 | <1 | 5 | - | 3 | 3 | <0.4 | - | 4 | 7.7 | 2 | - | <1 | <1 | 5 | - | 28 | 3 | 1 | - | 5 | 1 | 18 | - | 27 | 6 |
| 1.1C | 103 | 1.2 | <1 | 6 | - | 8 | 3 | <0.4 | - | 0.1 | 0.5 | 3 | - | 1 | <1 | 34 | - | 43 | 4 | 3 | - | 1 | 1 | 50 | - | 51 | 1 |
| 1.1C | 134 | 1.4 | <1 | 4 | - | 8 | 2 | 4.8 | - | 0.3 | 2.1 | 7 | - | 4 | <1 | 30 | - | 38 | 4 | 5 | - | 4 | <1 | 130 | 0.2 | 68 | 1 |
| 1.2 | 113 | 0.9 | <1 | <4 | - | 2 | 2 | <0.4 | - | <0.1 | 0.2 | 1 | - | 1 | <1 | 2 | - | 2 | 2 | <1 | - | <1 | 3 | 5 | - | 5 | <1 |
| 1.2 | 117 | 1 | <1 | <4 | - | 1 | 2 | <0.4 | - | 0.1 | 1.2 | 1 | - | <1 | <1 | 2 | - | 4 | 4 | <1 | - | <1 | 1 | 4 | - | 4 | 1 |
| 1.2 | 122 | 0.6 | <1 | 5 | - | 7 | 4 | <0.4 | - | 0.1 | 0.9 | 2 | - | 1 | <1 | 4 | - | 4 | 2 | <1 | - | <1 | <1 | 8 | - | 4 | <1 |
| 1.2 | 122 | 1.4 | <1 | <4 | - | 3 | 2 | <0.4 | - | <0.1 | <0.1 | 1 | - | 2 | <1 | <1 | - | 1 | <1 | <1 | - | 1 | <1 | 1 | - | 1 | <1 |
| 1.2 | 128 | 0.6 | <1 | <4 | - | 3 | 2 | <0.4 | - | <0.1 | <0.1 | 2 | - | 2 | <1 | 2 | - | 1 | <1 | <1 | - | 1 | <1 | 1 | - | 1 | <1 |
| **Laboratory PQL** | | | | 4 | - | 1 | 1 | 0.4 | - | 0.1 | 0.1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 |
| **NEPM - HIL B** | | | | 500 | NC | NC | NC | 150 | NC | NC | NC | 500 | NC | NC | NC | 30000 | NC | NC | NC | 1200 | NC | NC | NC | 1200 | NC | NC | NC |
| **NEPM - HIL C** | | | | 300 | NC | NC | NC | 90 | NC | NC | NC | 300 | NC | NC | NC | 17000 | NC | NC | NC | 1200 | NC | NC | NC | 600 | NC | NC | NC |
| **NEPM - HIL D** | | | | 3000 | NC | NC | NC | 900 | NC | NC | NC | 3600 | NC | NC | NC | 240000 | NC | NC | NC | 6000 | NC | NC | NC | 1500 | NC | NC | NC |
| **ANZECC (2000) - Slightly to Moderately Disturbed Systems** | | | **Fresh** | NC | NC | 13 | NA | NC | NC | 0.2 | NA | NC | NC | 1 | NA | NC | NC | 1.4 | NA | NC | NC | 11 | NA | NC | NC | 3.4 | NA |
| | | | **Marine** | NC | NC | 2.3 | 2.3 | NC | NC | 0.7 | 0.7 | NC | NC | 4.4 | 4.4 | NC | NC | 1.3 | 1.3 | NC | NC | 7 | 7 | NC | NC | 4.4 | 4.4 |
| **NSW EPA Ware Classification Guidelines** | | | **GSW** | 500 (1) | 5 | NC | NC | 100 (1) | 1 | NC | NC | 1900 (1) | 5 | NC | NC | NC | NC | NC | NC | 1050 (1) | 2 | NC | NC | 1500 (1) | 5 | NC | NC |
| | | | **RSW** | 2000 (1) | 20 | NC | NC | 400 (1) | 4 | NC | NC | 7600 (1) | 20 | NC | NC | NC | NC | NC | NC | 4200 (1) | 8 | NC | NC | 6000 (1) | 20 | NC | NC |

Notes to Table 9:

(1) - Waste Classification Criteria for Total Concentrations when used with TCLP Results

PQL - practical quantitation limit

NA - Not Applicable

NC - No Criteria

- Not Tested

TCLP - Standard NSW EPA TCLP test

ASLP - TCLP test using distilled water as extracting fluid

HR1 Leach - TCLP test using Hunter River water (sea water) as extracting fluid

GSW - General Solid Waste

RSW - Restricted Solid Waste

Exceeds ANZECC 2000 Trigger Values for Marine Waters (ie receiving wtares - Hunter River)

Exceeds GSW based on Total & Leachable concentrations (classification is limited to the soil matrix - excludes consideration of possible asbestos impacts)

Note that HR1 extracting fluid (Hunter River water) - contains the following contaminant concentrations:

* As - 2 ug/L
* Bo - 4800 ug/L
* Cu - 4 ug/L
* Zn - 15 ug/L

Refer to Table 12

| Fill UNIT | Sample | Depth (m) | PID | Metals | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Zinc (Zn) | | | | Mercury (Hg) | | | | Manganese (Mn) | | | | Beryllium (Be) | | | | Boron (Bo) | | | | Molybdenum (Mo) | | | | Selenium (Se) | | | |
| | | | | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach |
| | | | | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) |
| 1.1B | 101 | 0.35 | <1 | 160 | - | - | - | <0.1 | - | - | - | 250 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 107 | 0.4 | <1 | 330 | - | - | - | <0.1 | - | - | - | 240 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 109 | 0.4 | <1 | 220 | - | 66 | 44 | <0.1 | - | 0.08 | <0.05 | 300 | - | 30 | 5 | - | - | <0.5 | <0.5 | - | - | 30 | 4700 | - | - | 1 | 13 | - | - | <1 | <1 |
| 1.1B | 110 | 0.4 | <1 | 280 | - | - | - | <0.1 | - | - | - | 200 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 111 | 0.3 | <1 | 110 | - | 150 | 21 | <0.1 | - | 0.1 | <0.05 | 520 | - | 60 | 79 | - | - | <0.5 | <0.5 | - | - | 40 | 4600 | - | - | 4 | 14 | - | - | <1 | <1 |
| 1.1B | 112 | 0.4 | <1 | 440 | - | - | - | 0.1 | - | - | - | 500 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 113 | 0.3 | <1 | 300 | - | 130 | 31 | <0.1 | - | 0.1 | <0.05 | 690 | - | 68 | 20 | - | - | <0.5 | <0.5 | - | - | 50 | 4500 | - | - | 3 | 13 | - | - | <1 | <1 |
| 1.1B | 117 | 0.4 | <1 | 500 | - | 48 | 7 | 0.1 | - | <0.05 | <0.05 | 940 | - | 40 | 360 | - | - | <0.5 | <0.5 | - | - | 51 | 4400 | - | - | 2 | 14 | - | - | <1 | <1 |
| 1.1B | 118 | 0.3 | <1 | 180 | - | 150 | 23 | 0.2 | - | 0.2 | <0.05 | 290 | - | 75 | 10 | - | - | <0.5 | <0.5 | - | - | 50 | 4600 | - | - | 2 | 13 | - | - | <1 | <1 |
| 1.1B | 119 | 0.3 | <1 | 310 | - | - | - | 0.1 | - | - | - | 460 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 121 | 0.3 | <1 | 91 | - | 380 | 26 | <0.1 | - | <0.05 | <0.05 | 1300 | - | 20 | 20 | - | - | <0.5 | <0.5 | - | - | <20 | 4600 | - | - | <1 | 14 | - | - | <1 | <1 |
| 1.1B | 122 | 0.3 | <1 | 2600 | - | 240 | 180 | 0.1 | - | 0.08 | <0.05 | 1400 | - | 93 | 1000 | - | - | <0.5 | <0.5 | - | - | 75 | 4600 | - | - | 3 | 14 | - | - | <1 | <1 |
| 1.1B | 127 | 0.6 | <1 | 6-380 | - | 14 | 5 | <0.1 | - | <0.05 | <0.05 | 11-220 | - | 10 | 8 | - | - | <0.5 | <0.5 | - | - | <20 | 4800 | - | - | <1 | 11 | - | - | <1 | <1 |
| 1.1B | 128 | 0.3 | <1 | 260 | - | 48 | 44 | 0.1 | - | <0.05 | <0.05 | 270 | - | 30 | <5 | - | - | <0.5 | <0.5 | - | - | 69 | 4500 | - | - | 2 | 13 | - | - | <1 | <1 |
| 1.1B | 129 | 0.3 | <1 | 200 | - | - | - | <0.1 | - | - | - | 490 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 131 | 0.4 | <1 | 65 | - | - | - | <0.1 | - | - | - | 140 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1B | 133 | 0.4 | <1 | 430 | - | 160 | 85 | <0.1 | - | 0.05 | <0.05 | 440 | - | 57 | 7 | - | - | <0.5 | <0.5 | - | - | 30 | 4400 | - | - | <1 | 12 | - | - | <1 | <1 |
| 1.1B | 134 | 0.4 | <1 | 300 | - | 220 | 110 | <0.1 | - | <0.05 | <0.05 | 260 | - | 87 | 6 | - | - | <0.5 | <0.5 | - | - | 30 | 4500 | - | - | <1 | 11 | - | - | <1 | <1 |
| 1.1C | 107 | 0.7 | <1 | 72 | - | 1000 | 320 | <0.1 | - | <0.05 | <0.05 | 71 | - | 1600 | 10 | - | - | <0.5 | <0.5 | - | - | 90 | 4700 | - | - | 2 | 12 | - | - | <1 | |
| 1.1C | 103 | 1.2 | <1 | 63 | - | 91 | 19 | <0.1 | - | <0.05 | <0.05 | 97 | - | 30 | <5 | - | - | <0.5 | <0.5 | - | - | 30 | 4500 | - | - | <1 | 12 | - | - | <1 | <1 |
| 1.1C | 134 | 1.4 | <1 | 400 | - | 230 | 110 | <0.1 | - | <0.05 | <0.05 | 110 | - | 66 | 10 | - | - | <0.5 | <0.5 | - | - | <20 | 4700 | - | - | <1 | 12 | - | - | <1 | <1 |
| 1.2 | 113 | 0.9 | <1 | 16 | - | 12 | 13 | <0.1 | - | <0.05 | <0.05 | 16 | - | 20 | 10 | - | - | <0.5 | <0.5 | - | - | <20 | 4500 | - | - | <1 | 12 | - | - | <1 | <1 |
| 1.2 | 117 | 1 | <1 | 36 | - | 22 | 71 | <0.1 | - | <0.05 | <0.05 | 13 | - | 5 | 63 | - | - | <0.5 | <0.5 | - | - | <20 | 4600 | - | - | <1 | 11 | - | - | <1 | <1 |
| 1.2 | 122 | 0.6 | <1 | 75 | - | 55 | 35 | <0.1 | - | <0.05 | <0.05 | 39 | - | 30 | <5 | - | - | <0.5 | <.05 | - | - | <20 | 4700 | - | - | <1 | 12 | - | - | <1 | <1 |
| 1.2 | 122 | 1.4 | <1 | 3 | - | 3 | 3 | <0.1 | - | <0.05 | <0.05 | 12 | - | 10 | <5 | - | - | <0.5 | <0.5 | - | - | <20 | 4400 | - | - | <1 | 11 | - | - | <1 | <1 |
| 1.2 | 128 | 0.6 | <1 | 3 | - | 3 | 3 | <0.1 | - | <0.05 | <0.05 | 18 | - | 20 | <5 | - | - | <0.5 | <0.5 | - | - | <20 | 4600 | - | - | <1 | 11 | - | - | <1 | <1 |
| **Laboratory PQL** | | | | 1 | - | 1 | 1 | 0.1 | - | 0.05 | 0.05 | 1 | - | 1 | 5 | - | - | 0.5 | 0.5 | - | - | 20 | 100 | - | - | 1 | 1 | - | - | 1 | 1 |
| **NEPM - HIL B** | | | | 60000 | NC | NC | NC | 120 | NC | NC | NC | 14000 | NC | NC | NC | 90 | NC | NC | NC | 40000 | NC | NC | NC | NC | NC | NC | NC | 1400 | NC | NC | NC |
| **NEPM - HIL C** | | | | 30000 | NC | NC | NC | 80 | NC | NC | NC | 19000 | NC | NC | NC | 90 | NC | NC | NC | 20000 | NC | NC | NC | NC | NC | NC | NC | 700 | NC | NC | NC |
| **NEPM - HIL D** | | | | 400000 | NC | NC | NC | 730 | NC | NC | NC | 60000 | NC | NC | NC | 500 | NC | NC | NC | 300000 | NC | NC | NC | NC | NC | NC | NC | 10000 | NC | NC | NC |
| **ANZECC (2000) - Slightly to Moderately Disturbed Systems** | **Fresh** | | | NC | NC | 8 | NA | NC | NC | 0.06 | NA | NC | NC | 1900 | NA | NC | NC | 0.13 | NA | NC | NC | 370 | NA | NC | NC | 34 | NA | NC | NC | 5 | NA |
| | **Marine** | | | NC | NC | 15 | 15 | NC | NC | 0.1 | 0.1 | NC | NC | 80 | 80 | NC | NC | NC | NC | NC | NC | NC | NC | NC | NC | 23 | 23 | NC | NC | 3 | 3 |
| **NSW EPA Ware Classification Guidelines** | **GSW** | | | NC | NC | NC | NC | 50 (1) | 0.2 | NC | NC | NC | NC | NC | NC | 100 (1) | 1 | NC | NC | NC | NC | NC | NC | 1000 (1) | 5 | NC | NC | 50 (1) | 1 | NC | NC |
| | **RSW** | | | NC | NC | NC | NC | 200 (1) | 0.8 | NC | NC | NC | NC | NC | NC | 400 (1) | 4 | NC | NC | NC | NC | NC | NC | 4000 (1) | 20 | NC | NC | 200 (1) | 4 | NC | NC |

Notes to Table 9:

(1) - Waste Classification Criteria for Total Concentrations when used with TCLP Results

PQL - practical quantitation limit

NA - Not Applicable

NC - No Criteria

- Not Tested

TCLP - Standard NSW EPA TCLP test

ASLP - TCLP test using distilled water as extracting fluid

HR1 Leach - TCLP test using Hunter River water (sea water) as extracting fluid

GSW - General Solid Waste

RSW - Restricted Solid Waste

Exceeds ANZECC 2000 Trigger Values for Marine Waters (ie receiving wtares - Hunter River)

Exceeds GSW based on Total & Leachable concentrations (classification is limited to the soil matrix - excludes consideration of possible asbestos impacts)

Note that HR1 extracting fluid (Hunter River water) - contains the following contaminant concentrations:

* As - 2 ug/L
* Bo - 4800 ug/L
* Cu - 4 ug/L
* Zn - 15 ug/L

Refer to Table 12

| Fill UNIT | Sample | Depth (m) | PID | Analytes | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C10 - C14 | | | C15 - C28 | | | C29 - C36 | | | Total PAHs | | | | Benzo(a)Pyrene | | | | Napthalene | | | |
| | | | | Total | ASLP | HR1 Leach | Total | ASLP | HR1 Leach | Total | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach | Total | TCLP | ASLP | HR1 Leach |
| | | | | (mg/kg) | (µg/L) | (µg/L) | (mg/kg) | (µg/L) | (µg/L) | (mg/kg) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) | (mg/kg) | (mg/L) | (µg/L) | (µg/L) |
| 1.1B | 101 | 0.35 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 13 | 0.001 | - | - | 1.1 | <0.001 | | | <0.1 | <0.001 | | |
| 1.1B | 107 | 0.4 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 16 | NIL(+)ve | - | - | 1.1 | <0.001 | | | <1-0.1 | <0.001 | | |
| 1.1B | 109 | 0.4 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 16 | NIL(+)ve | 0.5 | 0.19 | 1.2 | <0.001 | 0.02 | <0.01 | <0.1 | <0.001 | 0.02 | 0.03 |
| 1.1B | 110 | 0.4 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 15 | NIL(+)ve | | | 1.1 | <0.001 | | | <0.1 | <0.001 | | |
| 1.1B | 111 | 0.3 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 6 | - | 0.4 | 0.32 | 0.56 | | 0.02 | <0.01 | <0.1 | | <0.02 | 0.04 |
| 1.1B | 112 | 0.4 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 29 | - | | | 2.6 | | | | <1-0.1 | | | |
| 1.1B | 113 | 0.3 | <1 | <50 | <50 | <50 | 190 | <100 | <100 | 140 | <100 | <100 | 130 | 0.002 | 1.5 | 8.6 | 9.6 | <0.001 | 0.1 | <0.01 | <1-0.1 | <0.001 | <0.02 | 0.51 |
| 1.1B | 117 | 0.4 | <1 | <50 | <50 | <50 | 240 | <100 | <100 | 180 | <100 | <100 | 67 | 0.004 | 4.4 | 3.7 | 3.6 | <0.001 | 0.04 | <0.01 | <1-.04 | <0.001 | 0.88 | 0.93 |
| 1.1B | 118 | 0.3 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 40 | NIL(+)ve | 0.4 | 0.13 | 2.8 | <0.001 | <0.01 | <0.01 | <1-0.1 | <0.001 | 0.02 | 0.06 |
| 1.1B | 119 | 0.3 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 20 | NIL(+)ve | - | - | 1.6 | <0.001 | - | - | <0.1 | <0.001 | - | - |
| 1.1B | 121 | 0.3 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 11 | - | 0.31 | 2.3 | 0.88 | - | <0.01 | <0.01 | <0.1 | | 0.08 | 0.1 |
| 1.1B | 122 | 0.3 | <1 | 110 | <50 | <50 | 2300 | <100 | <100 | 890 | <100 | <100 | 1200 | 0.001 | 1.1 | 3.5 | 47 | <0.001 | 0.03 | 0.01 | <1-15 | <0.001 | 0.04 | 0.25 |
| 1.1B | 127 | 0.6 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 0.3-21 | 0.001 | 0.37 | 0.09 | 0.05-1.7 | <0.001 | <0.01 | <0.01 | <0.1 | <0.001 | 0.1 | <0.02 |
| 1.1B | 128 | 0.3 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 38 | NIL(+)ve | 0.27 | 0.26 | 3 | <0.001 | 0.01 | <0.01 | <1-0.2 | <0.001 | <0.02 | 0.02 |
| 1.1B | 129 | 0.3 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 11 | NIL(+)ve | - | - | 0.84 | <0.001 | - | - | <0.1 | <0.001 | - | - |
| 1.1B | 131 | 0.4 | <1 | <50 | - | - | <100 | - | - | <100 | - | - | 18 | - | - | - | 1.2 | - | - | - | <0.1 | - | - | - |
| 1.1B | 133 | 0.4 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 13 | NIL(+)ve | 0.38 | 2.1 | 1 | <0.001 | 0.03 | 0.22 | <0.1 | <0.001 | <0.02 | 0.03 |
| 1.1B | 134 | 0.4 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | 200 | <100 | <100 | 12 | NIL(+)ve | 1.1 | 0.05 | 0.84 | <0.001 | 0.01 | <0.001 | <0.1 | <0.001 | 0.04 | <0.02 |
| 1.1C | 107 | 0.7 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 23 | NIL(+)ve | 0.45 | 1 | 1.6 | <0.001 | <0.01 | <0.001 | <0.1 | <0.001 | 0.09 | 0.25 |
| 1.1C | 103 | 1.2 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 2.2 | - | 0.28 | 0.11 | 0.2 | - | <0.01 | <0.01 | <0.1 | - | <0.02 | <0.02 |
| 1.1C | 134 | 1.4 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | 200 | <100 | <100 | 2.4 | - | 0.14 | 0.11 | 0.2 | - | <0.01 | <0.01 | <0.1 | - | <0.02 | <0.02 |
| 1.2 | 113 | 0.9 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 0.3 | - | 0.37 | 0.11 | 0.07 | - | <0.01 | <0.01 | <0.1 | - | 0.09 | <0.02 |
| 1.2 | 117 | 1 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | <0.05 | - | 0.24 | 0.08 | <0.05 | - | <0.01 | <0.01 | <0.1 | - | 0.02 | <0.02 |
| 1.2 | 122 | 0.6 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | 24 | 0.001 | 0.21 | 0.13 | 1.9 | <0.001 | <0.01 | <0.01 | <0.1 | <0.001 | 0.07 | 0.02 |
| 1.2 | 122 | 1.4 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | <0.05 | - | 0.79 | 0.14 | <0.05 | - | <0.01 | <0.01 | <0.1 | - | 0.08 | <0.02 |
| 1.2 | 128 | 0.6 | <1 | <50 | <50 | <50 | <100 | <100 | <100 | <100 | <100 | <100 | <0.05 | - | 0.19 | 0.06 | <0.05 | - | <0.01 | <0.01 | <0.1 | - | 0.03 | <0.02 |
| **Laboratory PQL** | | | | 50 | 50 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 0.05 | 0.001 | 0.001 | 0.001 | 0.05 | 0.001 | 0.001 | 0.001 | 0.1 | 0.001 | 0.02 | 0.02 |
| **NEPM - HIL B** | | | | NC | NC | NC | NC | NC | NC | NC | NC | NC | 400 | NC | NC | NC | 4 | NC | NC | NC | NC | NC | NC | NC |
| **NEPM - HIL C** | | | | NC | NC | NC | NC | NC | NC | NC | NC | NC | 300 | NC | NC | NC | 3 | NC | NC | NC | NC | NC | NC | NC |
| **NEPM - HIL D** | | | | NC | NC | NC | NC | NC | NC | NC | NC | NC | 4000 | NC | NC | NC | 40 | NC | NC | NC | NC | NC | NC | NC |
| **ANZECC (2000) - Slightly to Moderately Disturbed Systems** | | | **Fresh** | NC | NC | NA | NC | NC | NA | NC | NC | NA | NC | NC | Species Dependent | Species Dependent | NC | NC | 0.1 | NA | NC | NC | 16 | NA |
| | | | **Marine** | NC | NC | NC | NC | NC | NC | NC | NC | NC | NC | NC | | | NC | NC | 0.1 | 0.1 | NC | NC | 50 | 50 |
| **NSW EPA Ware Classification Guidelines** | | | **GSW** | 10,000 total | | | | | | | | | 200 | NC | NC | NC | 10 (1) | 0.04 | NC | NC | NC | NC | NC | NC |
| | | | **RSW** | 40,000 total | | | | | | | | | 800 | NC | NC | NC | 23 (1) | 0.16 | NC | NC | NC | NC | NC | NC |

Notes to Table 9:

(1) - Waste Classification Criteria for Total Concentrations when used with TCLP Results

PQL - practical quantitation limit

NA - Not Applicable

NC - No Criteria

- Not Tested

TCLP - Standard NSW EPA TCLP test

ASLP - TCLP test using distilled water as extracting fluid

HR1 Leach - TCLP test using Hunter River water (sea water) as extracting fluid

GSW - General Solid Waste

RSW - Restricted Solid Waste

Exceeds ANZECC 2000 Trigger Values for Marine Waters (ie receiving wtares - Hunter River)

Exceeds GSW based on Total & Leachable concentrations (classification is limited to the soil matrix - excludes consideration of possible asbestos impacts)

Note that HR1 extracting fluid (Hunter River water) - contains the following contaminant concentrations:

* As - 2 ug/L
* Bo - 4800 ug/L
* Cu - 4 ug/L
* Zn - 15 ug/L

Refer to Table 12

## 5.4 Results of Acid Sulfate Tests

Selected soil samples of the filling and underlying natural soils were subject to ASS screening tests in DP's laboratory. Selected soil samples were tested for pH in distilled water and pH following oxidation in peroxide. Table 10 presents the screening test results.

Based on the screening test results, one sample was sent to Envirolab Services Pty Ltd for detailed testing, comprising the Chromium suite. The laboratory report sheets are provided in Appendix C and the results are also summarised in Table 10.

## Table 10: Results of Acid Sulfate Soil Tests

| Sample Type | Sample ID | Sample Depth [a] (m) | Sample Description | Screening Test Results | | | | Chromium Suite Laboratory Results | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pH | | | Strength of Reaction [b] | $pH_{KCL}$ | Scr %S | s-TAA %S | s-$ANC_{BT}$ %S | Net Acidity[c] %S | Existing and Potential Acidity %S |
| | | | | $pH_F$ | $pH_{FOX}$ | $pH_F$ - $pH_{FOX}$ | | | | | | | |
| | 131 | 0.5 | dark brown sand | 6.1 | 5.8 | 0.3 | 4 | | | | | | |
| | 131 | 1 | brown sand | 7.5 | 6.4 | **1.1** | 2 | | | | | | |
| | 131 | 1.5 | brown sand | 7.7 | 6.9 | 0.8 | 2 | | | | | | |
| | 131 | 2 | brown sand | 8.5 | 8 | 0.5 | 2 | | | | | | |
| | 131 | 2.5 | brown sand | 8.8 | 8 | 0.8 | 2 | | | | | | |
| | 131 | 3 | brown sand | 8.8 | 7.8 | **1** | 2 | | | | | | |
| | 130 | 1.5 | brown sand | 8.7 | 7.7 | **1** | 2 | | | | | | |
| | 130 | 1 | brown sand | 8.5 | 7.6 | 0.9 | 2 | | | | | | |
| | 130 | 1.5 | brown sand | 8.6 | 7.8 | 0.8 | 2 | | | | | | |
| | 130 | 2 | brown sand | 8.6 | 8 | 0.6 | 2 | | | | | | |
| | 130 | 2.5 | brown sand | 8.4 | 7 | **1.4** | 2 | | | | | | |
| | 130 | 3 | grey/brown sand | 8.6 | 7.1 | **1.5** | 2 | | | | | | |
| | 132 | 0.5 | brown sand | 8.6 | 8.3 | 0.3 | 4 | | | | | | |
| | 132 | 1 | dark brown sand | 8.6 | 8.3 | 0.3 | 3 | | | | | | |
| | 132 | 1.5 | dark brown sand | 8.6 | 8.2 | 0.4 | 3 | | | | | | |
| | 132 | 1.9 | dark brown sand | 8.5 | 7.8 | 0.7 | 2 | | | | | | |
| | 122 | 0.55 | yellow brown sand filling | 7.1 | 6.6 | 0.5 | 1 | | | | | | |
| | 122 | 1 | yellow brown sand filling | 8 | 6.4 | 0.6 | 1 | | | | | | |
| | 122 | 1.5 | yellow brown sand filling | 7.9 | 7 | 0.9 | 1 | | | | | | |
| | 122 | 2 | yellow brown sand filling | 8.2 | 7.6 | 0.6 | 1 | | | | | | |
| | 122 | 2.5 | yellow brown sand filling | 8.2 | 7.4 | 0.8 | 1 | | | | | | |
| | 122 | 3 | yellow brown sand filling | 8.4 | 7.4 | **1** | 1 | | | | | | |
| | 130 | 1-1.45 | yellow brown samd | 8.2 | 7.8 | 0.4 | 4 | | | | | | |
| | 130 | 2.5-2.95 | grey/brown sand | 8.1 | 7.9 | 0.2 | 1 | | | | | | |
| | 130 | 4-4.45 | grey/brown sand | 8.2 | 7.5 | 0.7 | 1 | | | | | | |
| | 130 | 5.5-5.95 | grey/brown sand | 8.1 | 7.4 | 0.7 | 1 | | | | | | |
| | 116 | 1 | yellow brown sand | 8.1 | 7.6 | 0.5 | 1 | | | | | | |
| | 116 | 2.5 | yellow brown sand | 8.1 | 7.2 | 0.9 | 4 | | | | | | |
| | 116 | 4 | grey brown clayey sand | 8.1 | **2.9** | **5.2** | 1 | 8.6 | 0.42 | <0.1 | 0.39 | 0.16 | 0.42 |
| | 116 | 5.5 | grey brown clayey sand | 5.9 | 5.6 | 0.3 | 1 | | | | | | |
| | 103 | 1-1.45 | yellow brown sand | 8 | 7.5 | 0.5 | 1 | | | | | | |
| | 103 | 2.5-2.95 | yellow brown sand | 8 | 7.6 | 0.4 | 1 | | | | | | |
| | 103 | 4-4.45 | grey brown clayey sand | 8 | 7.3 | 0.7 | 1 | | | | | | |
| | 114 | 1-1.45 | yellow brown sand | 8.3 | 8 | 0.3 | 1 | | | | | | |
| | 114 | 2.5-2.95 | yellow brown sand | 8.3 | 7.8 | 0.5 | 1 | | | | | | |
| | 114 | 4-4.45 | brown sand | 8.3 | 7.4 | 0.9 | 1 | | | | | | |
| | 114 | 5.5-5.95 | brown sand | 8.1 | 7.2 | 0.9 | 1 | | | | | | |
| | 109 | 0.4 | brown gravelly sand | 8.2 | 8 | 0.2 | 1 | | | | | | |
| | 109 | 1 | yellow brown sand | 8.5 | 7.9 | 0.6 | 1 | | | | | | |
| | 109 | 1.5 | yellow brown sand | 8.4 | 8.3 | 0.1 | 1 | | | | | | |
| | 109 | 2 | yellow brown sand | 8.6 | 7.9 | 0.7 | 1 | | | | | | |
| | 109 | 2.5 | brown sand | 8.5 | 7.38 | 1.12 | 1 | | | | | | |
| | 109 | 3 | brown sand | 8.5 | 7.6 | 0.9 | 1 | | | | | | |
| | 105 | 0.4 | brown gravelly sand | 8.1 | 7.5 | 0.6 | 4, F, H | | | | | | |
| | 105 | 1 | grey brown sand | 7.8 | 7.6 | 0.2 | 1 | | | | | | |
| | 105 | 1.5 | grey brown sand | 7.8 | 7.7 | 0.1 | 1 | | | | | | |
| | 105 | 2 | grey brown sand | 7.9 | 7.4 | 0.5 | 1 | | | | | | |
| | 105 | 2.5 | grey brown sand | 8.1 | 7.6 | 0.5 | 1 | | | | | | |
| | 105 | 3 | grey brown sand | 8.1 | 7.4 | 0.7 | 1 | | | | | | |
| | 116 | 0.4 | brown sandy gravel | 8.4 | 8.4 | 0 | 4, F, H | | | | | | |
| | 116 | 1 | yelllow brown sand | 8.8 | 8.1 | 0.7 | 1 | | | | | | |
| | 116 | 1.5 | yellow brown sand | 8.7 | 8.3 | 0.4 | 1 | | | | | | |
| | 116 | 2 | yellow brown sand | 8.7 | 8.1 | 0.6 | 1 | | | | | | |
| | 116 | 2.5 | grey sand | 8.6 | 7.8 | 0.8 | 1 | | | | | | |
| | 116 | 3 | grey sand | 8.4 | 7.9 | 0.5 | 1 | | | | | | |
| | 117 | 1 | yellow brown sand | 8.8 | 7.9 | 0.9 | 1 | | | | | | |
| | 117 | 1.5 | yellow brown sand | 8.7 | 7.9 | 0.8 | 1 | | | | | | |
| | 117 | 2 | yellow brown sand | 8.6 | 8 | 0.6 | 1 | | | | | | |
| | 117 | 2.5 | brown sand | 8.7 | 8 | 0.7 | 1 | | | | | | |
| | 117 | 3 | brown sand | 8.7 | 7.9 | 0.8 | 1 | | | | | | |
| Guideline | | | Coarse sands, poorly buffered | **<4[d]** | **<3.5[e]** | **≥1[e]** | - | - | - | - | - | 0.01 | 0.01 |
| | | | Coarse sands to loamy sands and peats | | | | | | | | | 0.03 | 0.03 |
| | | | Medium sandy loams to light clays | | | | | | | | | 0.06[f]/0.03[g] | 0.06[f]/0.03[g] |
| | | | Fine medium to heavy clays & silty clays | | | | | | | | | 0.1[f]/0.03[g] | 0.1[f]/0.03[g] |

Notes to Table 10:

a Depth below ground surface

b Strength of Reaction
- 1 denotes no or slight reaction
- 2 denotes moderate reaction
- 3 denotes high reaction
- 4 denotes very vigorous reaction
- F denotes bubbling/frothy reaction indicative of organics
- H denotes heat generated

c Calculated by the laboratory with reference to ASS Laboratory Methods Guidelines (Ref 9)

d For actual acid sulfate soils (ASS)

e Indicative value only for Potential Acid Sulfate Soils (PASS)

f QASSIT Action Criteria for disturbance of 1-1000 tonnes of material

g QASSIT Action Criteria for disturbance of more than 1000 tonnes of material

**Bold** results indicative of potential acid sulfate soils

Underlined results indicate an exceedence of QASSIT action criteria when considering ANC value (Ref 8)

Shaded results indicate an exceedence of QASSIT action criteria (Ref 6)

$pH_F$ - Soil pH Test (1:5 soil:distilled water)

$pH_{FOX}$ - Soil Peroxide pH Test (1:4 soil:distilled water following oxidation of soil with 30% hydrogen peroxide ($H_20_2$))

*Laboratory methods used to quantify ANC are likely to overestimate environmental effectiveness

## 5.5 Results of Asbestos Sieving

The results of asbestos sieving conducted on selected samples are provided in Table 12, together with the calculated % Asbestos Content. Sieving was conducted with reference to NEPM (2015) (Ref 2), and the WA asbestos guidelines (Ref 13).

## Table 11: Results of Soil Sieving - Asbestos

| Bore | Sample Depth (m) | Soil Description | Soil Mass (kg) | No. Fragments | Fibro Size Range (mm) | Fibro Mass (g) | Fibro Mass (kg) | % Asbestos Content |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Assumed 15% AF |
| 101 | 0.35 | Brown gravelly sand filling | 13.36 | 3 | 5-20 | 11.36 | 0.01136 | 0.013% |
| 102 | 1 | Yellow and brown sand filling | 13.41 | 0 | NA | NA | NA | NA |
| 102 | 1.5 | Grey and brown clay filling | 17.29 | 0 | NA | NA | NA | NA |
| 102 | 2 | Brown sand filling | 16.48 | 0 | NA | NA | NA | NA |
| 103 | 2.7 | Grey and brown clay filling | 10.33 | 0 | NA | NA | NA | NA |
| 106 | 0.5 | Yellow and brown sand filling | 15.65 | 0 | NA | NA | NA | NA |
| 107 | 0.4 | Brown gravelly sand filling | 14.42 | 0 | NA | NA | NA | NA |
| 108 | 0.4 | Dark grey gravelly sand filling | 13.86 | 0 | NA | NA | NA | NA |
| 110 | 0.4 | Brown gravelly sand and sandy gravel filling | 14.26 | 1 | 20 | 2.75 | 0.00275 | 0.003% |
| 112 | 0.4 | Dark brown sandy gravel filling | 14.17 | 0 | NA | NA | NA | NA |
| 113 | 0.3 | Brown sandy gravel filling | 15.46 | 0 | NA | NA | NA | NA |
| 114 | 0.3 | Brown gravelly sand filling | 14.23 | 0 | NA | NA | NA | NA |
| 115 | 0.3 | Brown sandy gravel filling | 9.85 | 0 | NA | NA | NA | NA |
| 116 | 0.4 | Brown sandy gravel filling | 12.03 | 0 | NA | NA | NA | NA |
| 117 | 0.4 | Brown sandy gravel filling | 13.19 | 0 | NA | NA | NA | NA |
| 118 | 0.3 | Dark brown sandy gravel filling | 17.62 | 0 | NA | NA | NA | NA |
| 119 | 0.3 | Brown gravelly sand filling | 16.8 | 0 | NA | NA | NA | NA |
| 121 | 0.3 | Brown gravelly sand filling | 18.61 | 0 | NA | NA | NA | NA |
| 122 | 0.3 | Brown gravelly sand filling | 15.5 | 0 | NA | NA | NA | NA |
| 127 | 0.6 | Brown gravelly sand filling | 15.6 | 0 | NA | NA | NA | NA |
| 128 | 0.3 | Brown gravelly sand filling | 16.5 | 1 | 40 | 7.74 | 0.00774 | 0.007% |
| 129 | 0.3 | Brown gravelly sand filling | 13.49 | 0 | NA | NA | NA | NA |
| 130 | 0.3 | Brown sandy gravel filling | 18.8 | 0 | NA | NA | NA | NA |
| 131 | 0.4 | Brown gravelly sand filling | 15.1 | 0 | NA | NA | NA | NA |
| 132 | 0.4 | Brown gravelly sand filling | 14.9 | 0 | NA | NA | NA | NA |
| 133 | 0.4 | Brown sandy gravel filling | 17.9 | 0 | NA | NA | NA | NA |
| 134 | 0.4 | Brown gravelly sand filling | 16.8 | 0 | NA | NA | NA | NA |
| Criteria - Residential, minimal soil access[1] | | | | | | | | 0.04% |
| Criteria - Public Open Space | | | | | | | | 0.02% |

Notes to Table 11:

Shaded results exceed criteria

1 – NEPM (2013) (Ref 2)

## 5.6 Results of Groundwater and Surface Water Testing

The results of groundwater testing from the four wells and surface water testing from two locations in the harbour are shown in Table 12 below.

## Table 12: Results of Groundwater and Surface Water Testing

| Analyte | Units | PQL | ANZECC 2000 FW 95% | ANZECC 2000 MW 95% | NEPM 2013 Table 1C GILs, Fresh Waters | NEPM 2013 Table 1C GILs, Marine Waters | NEPM 2013 Table 1C GILs, Drinking Water | Field_ID | 103 | BD1 | 114 | 116 | 130 | HR1 | SW1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Sampled_Date-Tim | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | | 5/01/2017 |
| **Field** | | | | | | | | | | | | | | | |
| Turbidity | NTU | 0.1 | 6-50 | 0.5-10 | | | | | 110 | 100 | 79 | 84 | 69 | - | 0.9 |
| **Inorganics** | | | | | | | | | | | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | | | | | | | 6000 | 6000 | 960 | 840 | 770 | 42,000 | 32,000 |
| Nitrogen (Total) | mg/L | 0.1 | 0.35 | 0.3 | | | | | 0.7 | 0.8 | 1.9 | 1.1 | 1.1 | - | <0.1 |
| pH (Lab) | pH_Units | | 6.5-8 | 7-8.5 | | | | | 5.9 | 5.8 | 7.6 | 7.3 | 7.2 | 7.7 | 7.3 |
| **Metals** | | | | | | | | | | | | | | | |
| Arsenic | mg/L | 0.001 | 0.013 | 0.0023 | | | 0.01 | | - | - | - | - | - | 0.002 | - |
| Arsenic (Filtered) | mg/L | 0.001 | 0.013 | 0.0023 | | | 0.01 | | 0.005 | 0.005 | 0.003 | 0.014 | 0.004 | - | 0.002 |
| Beryllium | mg/L | 0.0005 | 0.00013 | | | | 0.06 | | - | - | - | - | - | <0.0005 | - |
| Beryllium (Filtered) | mg/L | 0.0005 | 0.00013 | | | | 0.06 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | - | <0.0005 |
| Boron | mg/L | 0.02 | 0.37 | | 0.37 | | 4 | | - | - | - | - | - | 4.8 | 4 |
| Boron (Filtered) | mg/L | 0.02 | 0.37 | | 0.37 | | 4 | | 0.64 | 0.64 | 0.48 | 0.32 | 0.21 | - | - |
| Cadmium | mg/L | 0.0001 | 0.0002 | 0.0007 | 0.0002 | 0.0007 | 0.002 | | - | - | - | - | - | <0.0001 | - |
| Cadmium (Filtered) | mg/L | 0.0001 | 0.0002 | 0.0007 | 0.0002 | 0.0007 | 0.002 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | - | <0.0001 |
| Chromium (III+VI) | mg/L | 0.001 | 0.001 | 0.0044 | | | | | - | - | - | - | - | <0.001 | - |
| Chromium (III+VI) (Filtered) | mg/L | 0.001 | 0.001 | 0.0044 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 |
| Copper | mg/L | 0.001 | 0.0014 | 0.0013 | 0.0014 | 0.0013 | 2 | | - | - | - | - | - | 0.004 | 0.005 |
| Copper (Filtered) | mg/L | 0.001 | 0.0014 | 0.0013 | 0.0014 | 0.0013 | 2 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | - |
| Iron (Filtered) | mg/L | 0.01 | | | | | | | 0.72 | 0.73 | 0.22 | 1.2 | 1 | - | <0.01 |
| Lead | mg/L | 0.001 | 0.0034 | 0.0044 | 0.0034 | 0.0044 | 0.01 | | - | - | - | - | - | <0.001 | - |
| Lead (Filtered) | mg/L | 0.001 | 0.0034 | 0.0044 | 0.0034 | 0.0044 | 0.01 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 |
| Manganese (Filtered) | mg/L | 0.005 | 1.9 | 0.08 | 1.9 | | 0.5 | | 0.23 | 0.23 | 0.043 | 0.13 | 0.15 | - | 0.01 |
| Mercury | mg/L | 0.00005 | 0.00006 | 0.0001 | 0.00006 | 0.0001 | 0.001 | | - | - | - | - | - | <0.00005 | - |
| Mercury (Filtered) | mg/L | 0.00005 | 0.00006 | 0.0001 | 0.00006 | 0.0001 | 0.001 | | <0.00005 | <0.00005 | <0.00005 | <0.00005 | <0.00005 | - | <0.00005 |
| Molybdenum | mg/L | 0.001 | 0.034 | 0.023 | | | 0.05 | | - | - | - | - | - | 0.012 | - |
| Molybdenum (Filtered) | mg/L | 0.001 | 0.034 | 0.023 | | | 0.05 | | 0.008 | 0.009 | 0.004 | 0.021 | 0.018 | - | 0.011 |
| Nickel | mg/L | 0.001 | 0.011 | 0.007 | 0.011 | 0.007 | 0.02 | | - | - | - | - | - | <0.001 | - |
| Nickel (Filtered) | mg/L | 0.001 | 0.011 | 0.007 | 0.011 | 0.007 | 0.02 | | 0.075 | 0.083 | 0.015 | 0.003 | 0.011 | - | <0.001 |
| Phosphorus | mg/L | 0.05 | 0.025 | 0.03 | | | | | 0.1 | 0.2 | 0.4 | 0.2 | <0.05 | - | <0.05 |
| Selenium | mg/L | 0.001 | 0.005 | 0.003 | 0.005 | | 0.01 | | - | - | - | - | - | <0.001 | - |
| Selenium (Filtered) | mg/L | 0.001 | 0.005 | 0.003 | 0.005 | | 0.01 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 |
| Zinc | mg/L | 0.001 | 0.008 | 0.015 | 0.008 | 0.015 | | | - | - | - | - | - | 0.015 | 0.009 |
| Zinc (Filtered) | mg/L | 0.001 | 0.008 | 0.015 | 0.008 | 0.015 | | | 0.013 | 0.012 | 0.002 | 0.003 | 0.003 | - | - |
| **TPH** | | | | | | | | | | | | | | | |
| C10-C16 | mg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| C16-C34 | mg/L | 0.1 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| C34-C40 | mg/L | 0.1 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Oil and Grease | mg/L | 5 | 0.3 | | | | | | <5 | <5 | <5 | <5 | <5 | - | <5 |
| F2-NAPHTHALENE | mg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| C6 - C9 | mg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| C10 - C14 | mg/L | 0.05 | | | | | | | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| C15 - C28 | mg/L | 0.1 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| C29-C36 | mg/L | 0.1 | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| C6-C10 less BTEX (F1) | mg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| C6-C10 | mg/L | 0.01 | | | | | | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **BTEX** | | | | | | | | | | | | | | | |
| Benzene | mg/L | 0.001 | 0.95 | 0.5 | 0.95 | 0.5 | 0.001 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Ethylbenzene | mg/L | 0.001 | 0.08 | 0.005 | | | 0.3 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Toluene | mg/L | 0.001 | 0.18 | 0.18 | | | 0.8 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Xylene (m & p) | mg/L | 0.002 | | | | | | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Xylene (o) | mg/L | 0.001 | 0.35 | 0.35 | 0.35 | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **PAH/Phenols** | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/L | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Acenaphthene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Acenaphthylene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Anthracene | mg/L | 0.00001 | 0.00001 | 0.00001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Benz(a)anthracene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Benzo(a) pyrene | mg/L | 0.00001 | 0.0001 | 0.0001 | | | 0.00001 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Benzo(b,j+k)fluoranthene | mg/L | 0.00002 | | | | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.00002 | <0.0002 |
| Benzo(g,h,i)perylene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Chrysene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Dibenz(a,h)anthracene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Fluoranthene | mg/L | 0.00001 | 0.001 | 0.001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Fluorene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Indeno(1,2,3-c,d)pyrene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Naphthalene | mg/L | 0.00002 | 0.016 | 0.05 | 0.016 | 0.05 | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.00002 | <0.0002 |
| Phenanthrene | mg/L | 0.00001 | 0.0006 | 0.0006 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |
| Pyrene | mg/L | 0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.00001 | <0.0001 |

# 6. Environmental Assessment

## 6.1 Soil Assessment

The results of soil analysis indicate the following:

- **Unit 1.1A – Pavement Gravels**
  - Within HIL B, HIL C and HIL D Criteria;
  - Within 'General Solid Waste' (GSW) classification guidelines;
  - Within the Recovered Aggregate Order;
  - Exceeds the slag (blast furnace), RRO for Abs Max Cu and Ni, and Max Ave for Cu, Ni and Zn.
- **Unit 1.1B and 1.1C – Filling with Anthropogenic Inclusions**
  - Exceedance of HIL B and HIL C for PAH (B(a)P): Bores 113, 117, 118, 122, 128;
  - Exceedance of HIL D for PAH (B(a)P) and exceedance of hydrocarbon management limits: Bore 122;
  - Exceedance of EIL criteria: Bores 101, 104, 106, 109, 108, 110, 111, 112, 113, 115, 117, 118, 119, 121, 122, 127, 128, 129, 130, 132, 133, 134 (some metals (Cu, Ni, Zn), TRH (Bores 117 and 122), PAH (B(a)P));
  - Exceedance of ENM Abs Max criteria: Bores 101, 107, 108, 109, 110, 112, 113, 117, 118, 119, 121, 122, 127, 128, 129, 131, 133 and 134 (PAH (B(a)P), some metals (Pb, Zn, Cd, Cu), Foreign Materials (in some samples)) and exceeds ENM Max Ave for Cd, Pb, Zn, Total PAH and B(a)P;
  - Exceedance of GSW waste classification criteria based on total contaminant concentrations. However, based on Total and Leachable contaminant concentrations, together with consideration of the General Immobilisation Approval for slag impacted soils (Ref 19), (Bore 122), Unit 1.1B and 1.1C soils are classified GSW (excluding soils impacted by ACM);
  - Presence of ACM in Bores 101, 110 and 128. Soils impacted by ACM are classified 'Special Waste' – Asbestos, in addition to the chemical classification.
- **Unit 1.2 – Sand Fill**
  - Within HIL B, HIL C and HIL D;
  - Within EIL criteria with minor exceptions in Bore 122 and 126;
  - Within ENM criteria, except for the average pH which was slightly over the criteria;
  - Absence of ASS conditions;
  - Within GSW waste classification guidelines.
- **Unit 2 – Natural Soils**
  - Absence of ASS conditions in natural sandy soils. Clayey natural soils are potential ASS;
  - Within HIL B, HIL C and HIL D criteria;
  - Within ENM criteria (for comparison purposes only), however, the average pH was marginally above the criteria (i.e. pH 9.1 compared to pH 9);
  - Classified Virgin Excavated Materials (VENM), with the exception of clayey soils which are ASS.

Fragments of gravel in a bituminous matrix (i.e. possible Coal Tar), were observed in filling beneath pavement gravels within Fill Unit 1.1B in Bores 107, 113, 119, 131 and 132. The results of testing on four selected samples indicated the 'absence' of Coal Tar. Although 'Coal Tar' was not identified within the bores drilled for the current assessment, it is noted that residual bituminous materials (possible Coal Tar) may be present within upper filling at the site, based on the results of previous site remediation, particularly over the north-west corner of the site (i.e. former Wharf Road alignment) as shown on Drawing 1 in Appendix D.

Anthropogenic inclusions were observed within upper filling at the site as discussed in Section 4.2. Fibro fragments (possible Asbestos Containing Materials – ACM) were observed in four bores (101, 110, 172 and 128). The results of laboratory testing confirmed the presence of ACM within the following bores in Unit 1.1B - filling beneath pavement gravels:

- Bore 101 / 0.35 m;
- Bore 110 / 0.4 m;
- Bore 128 / 0.3 m.

Possible ACM fragments were not observed to be prevalent or widespread across the site, however, there is a risk that additional ACM may be encountered during site excavations due to the observed presence of anthropogenic materials within upper filling, including building waste materials.

## 6.2 Beneficial Re-use of Excavated Soil within Honeysuckle Area

It is understood that there may be an opportunity for beneficial re-use of site soils within the adjacent Honeysuckle area, and possibly beneath the groundwater table adjacent to the Hunter River.

The following is noted regarding soil conditions within the subject site:

- The soil conditions encountered are generally commensurate with those present within the greater Honeysuckle area, which have been assessed to be suitable to remain on-site subject to minimal soil access;
- Upper filling (Unit 1.1B and 1.1C) contains elevated contaminants as indicated in Section 6.1. Leachability testing also indicates that the propensity of these soils to leach in distilled water and Hunter River water is moderate. It is noted that the leachability test (TCLP) conducted is an aggressive test which is likely to overestimate the leachability characteristics of the soils when compared to natural processes (i.e. rainfall infiltration, tidal influence and groundwater flows);
- Although Unit 1.1B and 1.1C filling contains elevated contaminants, beneficial re-use of the materials within the Honeysuckle area could be considered subject to statutory and regulatory requirements, and the following conditions for use:
    - Subject to segregation of soils exceeding the relevant HIL criteria;
    - Used in areas with minimal soil access;
    - Used above the water table;
- Additional assessment of the suitability and feasibility of re-use of Unit 1.1B and 1.1C soils is recommended if proposed for re-use due to the above conditions for beneficial use;

- The results of testing on lower sand filling (Unit 1.2) generally indicates low contaminant concentrations and a low propensity for the soils to leach. Such materials are considered to be suitable for re-use within the Honeysuckle area (subject to regulatory approval) or on another site subject to a specific exemption (See Section 7 below). The soils should be assessed as 'fit for purpose' prior to use on another site in accordance with NSW EPA guidelines;
- Natural underlying sandy soils are considered to be suitable for use within the Honeysuckle area subject to segregation and treatment of clayey ASS (Refer to Section 7).

### 6.3 Groundwater and Surface Water

The results of surface water testing indicates the following:

- Saline conditions (Hunter River Water);
- Exceedance of the ANZECC 2000 Marine Guidelines for Boron, Copper, and Zinc, indicating a 'disturbed system';

Exceedance of the ANZECC 2000 guidelines were found in groundwater for the following parameters:

- Turbidity;
- pH;
- Nitrogen / Phosphorus;
- Metals (As, B, Mn, Ni, Zn).

## 7. Conclusions and Recommendations

The soils present within the site are generally suitable to remain on-site, subject to the conditions presented in the Site Audit Statement and Report (i.e. minimal soil access and no beneficial use of groundwaters).

Based on the results of the assessment, the following options could be considered for possible re-use or disposal of soils during site construction:

- Bitumen / Asphalt seal (Carpark):
  - Disposal as GSW (pre-classified), OR
  - Reuse or recycle the material with reference to the NSW EPA The Reclaimed Asphalt Pavement Order (Ref 20);
- Unit 1.1A – Pavement Gravels:
  - Disposal as GSW to a licensed landfill; OR
  - Re-use within the site, or within the greater 'Honeysuckle' area subject to regulatory approvals; OR

  - Re-use as 'Recovered Aggregate' on another site, subject to a successful application to the NSW EPA for a Specific Exemption. It is noted that the pavement gravels contain slag materials, and minor exceedances were found for the general RRO for blast furnace slag;
  - It is noted that the pavement gravels were a commercially supplied material for use in pavement construction.
- Unit 1.1B and 1.1C – Filling with anthropogenic inclusions:
  - Disposal as GSW to a licensed landfill (excluding ACM impacted materials);
  - Disposal as GSW with bonded ACM material (GSW / Special Waste), for asbestos impacted soils;
  - Possible re-use on another site, subject to segregation and localised remediation, and in accordance with a specific exemption obtain through NSW EPA. Additional assessment will be required to confirm the suitability and feasibility of re-use of these materials on another site;
  - Possible re-use within the adjacent Honeysuckle area subject to conditions (i.e. segregation and localised remediation, use in areas with minimal soil access, use above the water table etc.). Additional assessment will be required to confirm the suitability and feasibility of re-use.
- Unit 1.2 – Sand fill:
  - Disposal as GSW to a licensed landfill; OR
  - Re-use on the site, or within the greater 'Honeysuckle' area subject to regulatory approvals; OR
  - Re-use on another site subject to a successful application to the NSW EPA for a Specific Exemption due to the slightly elevated average pH found (i.e. above ENM criteria);
  - Re-use as backfill above or below the water table adjacent to the Hunter River;
  - Re-use will be subject to progressive excavation, inspection and segregation of soils observed to contain anthropogenic inclusions, as part of the CEMP for site development;
- Natural Soils:
  - Re-use of sandy natural soils as VENM on another site, subject to consideration of the natural elevated pH (i.e. average pH 9.1);
  - Segregation of clayey natural soils (if encountered during excavations) for ASS treatment, prior to possible re-use, or disposal as GSW. Re-use on another site could also be considered for treated ASS under a site specific exemption.

The following recommendations are made to facilitate effective re-use / disposal of materials during construction:

- Confirmation of the possible use of suitable materials within the greater 'Honeysuckle' area;
- Application for specific exemptions for Unit 1.1A – Pavement Gravels and Unit 1.2-Sand Fill if re-use on another site is required;
- Preparation of an Excavation Management Plan to accompany the CEMP for the project, including an Unexpected Finds Protocol, detailing requirements for progressive excavation, segregation and validation to maximise the re-use potential of excavated materials;

- Preparation of an Acid Sulfate Soil Management Plan (ASSMP) due to the presence of ASS soils within the site that may be disturbed during development (i.e. excavations and dewatering);
- Preparation of Dewatering Management Plan to assist with the management of extracted waters during construction dewatering;
- If re-use of upper filling containing anthropogenic inclusions (i.e. Unit 1.1B and 1.1C) is proposed, additional assessment will be required to confirm the suitability and feasibility for re-use on another site. Re-use of these materials is likely to require segregation and localised remediation and a specific exemption for re-use on another site. Re-use will also be subject to regulatory and statutory requirements.

The results of groundwater quality testing indicated exceedances of the ANZECC 2000 guidelines for a number of parameters including metals and nitrogen phosphorus. On this basis, direct discharge of groundwater to the Hunter River during dewatering activities is not recommended, in the absence of appropriate treatment prior to discharge. Reinjection or infiltration of groundwater could be considered during dewatering, subject to appropriate design and available land, and subject to regulatory and statutory approvals.

## 8. References

1. ANZECC (2000) “Australian and New Zealand Guidelines for Fresh and Marine Water Quality”, October 2000.
2. National Environment Protection Council (2013), ‘National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013’, 11 April 2013.
3. NSW EPA (2014) ‘Waste Classification Guidelines, Part 1: Classifying Waste’, November 2014;
4. NSW EPA (2014) ‘Waste Classification Guidelines, Part 4: Acid Sulfate Soils’, November 2014;
5. NSW EPA, “Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The Excavated Natural Material Order 2014”, November 2014.
6. NSW EPA (2014) ‘The Excavated Natural Exemption Order 2014” (ENM Exemption).
7. Stone, Y, Ahern CR, and Blunden B (1998), “Acid Sulfate Soil Manual, 1998”, New South Wales Acid Sulfate Soil Management Advisory Committee, August 1998.
8. Dear SE, Ahern CR 2014, O’Brien LE, Dobos SK, McElnea AE, Moore NG and Watling KM “Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines”, Department of Science, Information Technology, Innovation and the Arts, Queensland Government, June 2014.
9. Ahern CR, Sullivan LA, McElnea AE “Acid Sulfate Soils Laboratory Methods Guidelines” in “Queensland Acid Sulfate Soil Technical Manual”, Department of Natural Resources and Mines, June 2004.
10. RCA Australia, “Site Remediation and Validation, Park Residential Honeysuckle Development Estate”, Ref 4489C-001/1, August 2005.

11. Environ Australia Pty Ltd, “Site Audit Report; Honeysuckle Development, Park Residential”, Ref. 31-0069H, Audit GN76, September 2005 and “Site Audit Statement”, Ref. GN 76, September 2005 (Graeme Nyland – EPA Accredited Site Auditor).

12. JBS Environment, “Material Classification – Park Residential, Honeysuckle Drive, Newcastle, NSW”, Ref. JBS 40289-11350, June 2007.

13. Government of Western Australia, Department of Health, “Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in Western Australia”, May 2009.

14. Douglas Partners Pty Ltd, “Report on Geotechnical Investigation, 50 Honeysuckle Drive, Newcastle”, Project 91034.00, Report 91034.00.R.002.Rev1, April 2017.

15. NSW EPA 2014, “The Recovered Aggregate Order 2014”, (Rec Agg Order) - Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

16. NSW EPA 2014, “The Recovered Aggregate Order 2014”, (Rec Agg Exemption) - Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014.

17. NSW EPA 2014, “The Blast Furnace Slag Order 2014”, Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation - The blast furnace slag order 2014.

18. Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014.

19. NSW EPA, Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014.

20. The electric arc furnace slag order 2014- The blast furnace slag exemption 2014 - Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014.

## 9. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 50 Honeysuckle Drive, Newcastle in accordance with DP’s proposal dated 22 November 2015 and acceptance received from Doma Holdings (NSW) Pty Ltd dated 8 December 2016. The work was carried out under DP’s Conditions of Engagement. This report is provided for the exclusive use of Doma Holdings (NSW) Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

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

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

Asbestos containing materials (ACM) have been identified within localised areas of the site. The subsurface conditions contain variable filling that contains building demolition materials that are indicative of the possible presence of hazardous building materials (HBM) including asbestos. It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

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

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

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP.

DP may be able, however, to assist the Client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Please note that Part 5.6, Section 143 of the Protection of the Environment Operations (POEO) Act 1997 states that it is an offence for waste to be transported to a place that cannot lawfully be used as a facility to accept that waste. It is the duty of the owner and transporter of the waste to ensure that the waste is disposed of appropriately. DP accepts no liability for the unlawful disposal of waste materials from any site.

**Douglas Partners Pty Ltd**

# Appendix A

About This Report
Sampling Methods
Soil Descriptions
Symbols and Abbreviations
Information of Cone Penetration Tests

# About this Report

Douglas Partners

## Introduction

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

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

## Copyright

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

## Borehole and Test Pit Logs

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

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

## Groundwater

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

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

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

## Reports

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

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

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

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

# *About this Report*

## Site Anomalies

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

## Information for Contractual Purposes

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

## Site Inspection

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

## Sampling

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

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

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

## Test Pits

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

## Large Diameter Augers

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

## Continuous Spiral Flight Augers

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

## Non-core Rotary Drilling

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

## Continuous Core Drilling

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

## Standard Penetration Tests

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

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

The test results are reported in the following form.

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

  4,6,7
  N=13

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

  15, 30/40 mm

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

### Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

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

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

## Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

## Soil Types

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

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

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

| Type | Particle size (mm) |
|---|---|
| Coarse gravel | 20 - 63 |
| Medium gravel | 6 - 20 |
| Fine gravel | 2.36 - 6 |
| Coarse sand | 0.6 - 2.36 |
| Medium sand | 0.2 - 0.6 |
| Fine sand | 0.075 - 0.2 |

The proportions of secondary constituents of soils are described as:

| Term | Proportion | Example |
|---|---|---|
| And | Specify | Clay (60%) and Sand (40%) |
| Adjective | 20 - 35% | Sandy Clay |
| Slightly | 12 - 20% | Slightly Sandy Clay |
| With some | 5 - 12% | Clay with some sand |
| With a trace of | 0 - 5% | Clay with a trace of sand |

Definitions of grading terms used are:

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

## Cohesive Soils

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

| Description | Abbreviation | Undrained shear strength (kPa) |
|---|---|---|
| Very soft | vs | <12 |
| Soft | s | 12 - 25 |
| Firm | f | 25 - 50 |
| Stiff | st | 50 - 100 |
| Very stiff | vst | 100 - 200 |
| Hard | h | >200 |

## Cohesionless Soils

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

| Relative Density | Abbreviation | SPT N value | CPT qc value (MPa) |
|---|---|---|---|
| Very loose | vl | <4 | <2 |
| Loose | l | 4 - 10 | 2 -5 |
| Medium dense | md | 10 - 30 | 5 - 15 |
| Dense | d | 30 - 50 | 15 - 25 |
| Very dense | vd | >50 | >25 |

# *Soil Descriptions*

## Soil Origin

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

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

# Symbols & Abbreviations

Douglas Partners

## Introduction

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

## Drilling or Excavation Methods

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

## Water

| | |
|---|---|
| ▷ | Water seep |
| ▽ | Water level |

## Sampling and Testing

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

## Description of Defects in Rock

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

### Defect Type

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

### Orientation

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

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

### Coating or Infilling Term

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

### Coating Descriptor

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

### Shape

| | |
|---|---|
| cu | curved |
| ir | irregular |
| pl | planar |
| st | stepped |
| un | undulating |

### Roughness

| | |
|---|---|
| po | polished |
| ro | rough |
| sl | slickensided |
| sm | smooth |
| vr | very rough |

### Other

| | |
|---|---|
| fg | fragmented |
| bnd | band |
| qtz | quartz |

# *Symbols & Abbreviations*

## Graphic Symbols for Soil and Rock

### General

Asphalt

Road base

Concrete

Filling

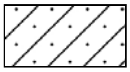
### Soils

Topsoil

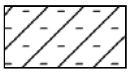
Peat

Clay

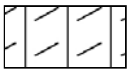
Silty clay

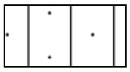

Sandy clay

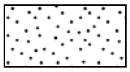
Gravelly clay

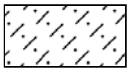

Shaly clay

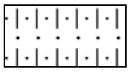
Silt


Clayey silt


Sandy silt


Sand

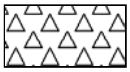

Clayey sand


Silty sand

Gravel

Sandy gravel

Cobbles, boulders

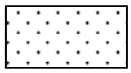

Talus

### Sedimentary Rocks

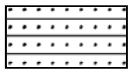
Boulder conglomerate

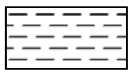
Conglomerate

Conglomeratic sandstone

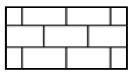

Sandstone

Siltstone


Laminite

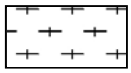

Mudstone, claystone, shale

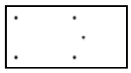
Coal


Limestone

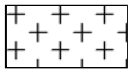
### Metamorphic Rocks

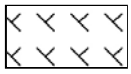
Slate, phyllite, schist

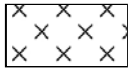

Gneiss

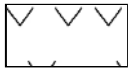

Quartzite

### Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia

Porphyry

# Cone Penetration Tests

Douglas Partners

## Introduction

The Cone Penetration Test (CPT) is a sophisticated soil profiling test carried out in-situ. A special cone shaped probe is used which is connected to a digital data acquisition system. The cone and adjoining sleeve section contain a series of strain gauges and other transducers which continuously monitor and record various soil parameters as the cone penetrates the soils.

The soil parameters measured depend on the type of cone being used, however they always include the following basic measurements

- Cone tip resistance $q_c$
- Sleeve friction $f_s$
- Inclination (from vertical) i
- Depth below ground z

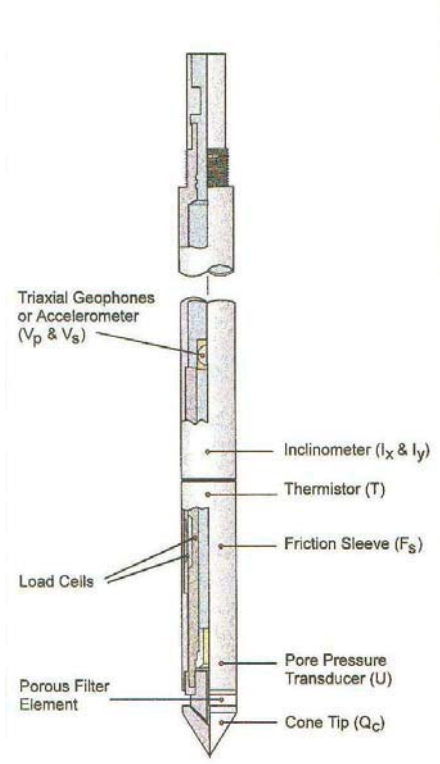



Figure 1: Cone Diagram

The inclinometer in the cone enables the verticality of the test to be confirmed and, if required, the vertical depth can be corrected.

The cone is thrust into the ground at a steady rate of about 20 mm/sec, usually using the hydraulic rams of a purpose built CPT rig, or a drilling rig. The testing is carried out in accordance with the Australian Standard AS1289 Test 6.5.1.

Figure 2: Purpose built CPT rig

The CPT can penetrate most soil types and is particularly suited to alluvial soils, being able to detect fine layering and strength variations. With sufficient thrust the cone can often penetrate a short distance into weathered rock. The cone will usually reach refusal in coarse filling, medium to coarse gravel and on very low strength or better rock. Tests have been successfully completed to more than 60 m.

## Types of CPTs

Douglas Partners (and its subsidiary GroundTest) owns and operates the following types of CPT cones:

| Type | Measures |
|---|---|
| Standard | Basic parameters ($q_c$, $f_s$, i & z) |
| Piezocone | Dynamic pore pressure (u) plus basic parameters. Dissipation tests estimate consolidation parameters |
| Conductivity | Bulk soil electrical conductivity ($\sigma$) plus basic parameters |
| Seismic | Shear wave velocity ($V_s$), compression wave velocity ($V_p$), plus basic parameters |

## Strata Interpretation

The CPT parameters can be used to infer the Soil Behaviour Type (SBT), based on normalised values of cone resistance (Qt) and friction ratio (Fr). These are used in conjunction with soil classification charts, such as the one below (after Robertson 1990)

# Cone Penetration Tests

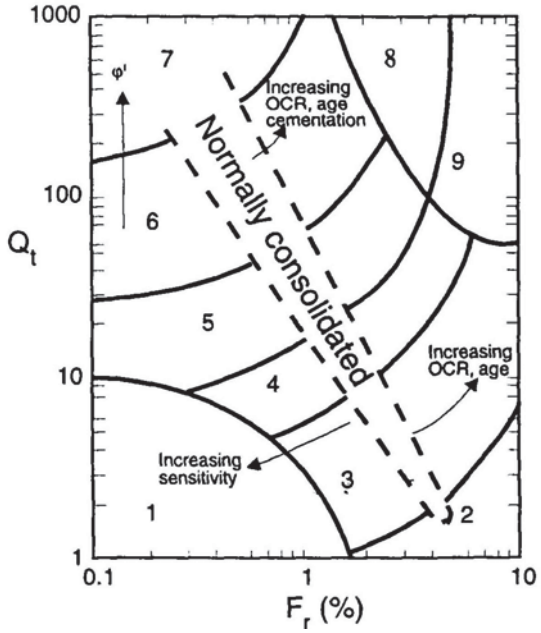



Figure 3: Soil Classification Chart

DP's in-house CPT software provides computer aided interpretation of soil strata, generating soil descriptions and strengths for each layer. The software can also produce plots of estimated soil parameters, including modulus, friction angle, relative density, shear strength and over consolidation ratio.

DP's CPT software helps our engineers quickly evaluate the critical soil layers and then focus on developing practical solutions for the client's project.

## Engineering Applications

There are many uses for CPT data. The main applications are briefly introduced below:

**Settlement**

CPT provides a continuous profile of soil type and strength, providing an excellent basis for settlement analysis. Soil compressibility can be estimated from cone derived moduli, or known consolidation parameters for the critical layers (eg. from laboratory testing). Further, if pore pressure dissipation tests are undertaken using a piezocone, in-situ consolidation coefficients can be estimated to aid analysis.

**Pile Capacity**

The cone is, in effect, a small scale pile and, therefore, ideal for direct estimation of pile capacity. DP's in-house program ConePile can analyse most pile types and produces pile capacity versus depth plots. The analysis methods are based on proven static theory and empirical studies, taking account of scale effects, pile materials and method of installation. The results are expressed in limit state format, consistent with the Piling Code AS2159.

**Dynamic or Earthquake Analysis**

CPT and, in particular, Seismic CPT are suitable for dynamic foundation studies and earthquake response analyses, by profiling the low strain shear modulus $G_0$. Techniques have also been developed relating CPT results to the risk of soil liquefaction.

**Other Applications**

Other applications of CPT include ground improvement monitoring (testing before and after works), salinity and contaminant plume mapping (conductivity cone), preloading studies and verification of strength gain.

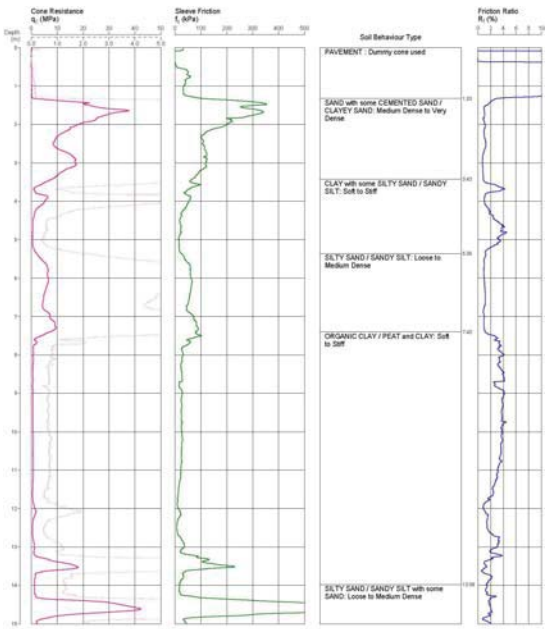



Figure 4: Sample Cone Plot

# Appendix B

Borehole Logs - Bores 101 to 134
Cone Penetration Tests - CPTs 201 to 209
Results of Rising Head Permeability Tests
Figure B1 – Groundwater Pressure Head vs Rainfall

# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.85m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 101
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.28 | | | E | 0.3 | | | | |
| | 0.35 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 50mm in size with trace brick, concrete and steel, moist | | E | 0.35 | | PID <1 | | |
| | | | | E | 0.45 | | PID <1 | | |
| | | At 0.35m, fibrous fragment, possible ACM | | | | | | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells up to 10mm in size, moist | | | | | | | |
| | 1 | | | E | 1.0 | | PID <1 | | 1 |
| | | From 1.7m, clay in parts | | | | | | | |
| | | From 1.9m, saturated | | E | 1.9 | | PID <1 | ▼ | |
| | 2 | | | | | | | | 2 |
| | | | | E | 2.4 | | PID <1 | | |
| | | From 2.6m, grey | | | | | | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 1.9m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.83m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 102
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | | | | | | | | |
| | 0.3 | FILLING - Generally comprising brown gravelly sand filling with some subangular gravel and slag up to 50mm in size, moist | | E | 0.4 | | PID <1 | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells, humid | | A | 0.55 | | PID<1 | | |
| | | From 0.6m, with abundant plastic, glass, steel wire refuse | | | | | | | |
| 1 | | | | A, E | 1.0 | | PID<1 | | 1 |
| | 1.2 | FILLING - Generally comprising grey-brown clay filling with abundant refuse including plastic, terracotta, brick | | | | | | | |
| | | | | A, E | 1.5 | | PID<1 | | |
| | 1.8 | FILLING - Generally comprising brown, fine to coarse grained sand filling with abundant refuse, including plastic terracotta and brick with some clay in parts, saturated | | | | | | ▼ | |
| 2 | | | | A, E | 2.0 | | PID<1 | | 2 |
| | | | | E | 2.6 | | PID <1 | | |
| | 2.7 | SAND - (Medium dense), yellow-brown, fine to coarse grained sand with abundant shells up to 15mm in size, saturated | | | | | | | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | A | 3.0 | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 1.8m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.03m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 103
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.23 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 60mm in size with some shells up to 5mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.5 | FILLING - Generally comprising grey-brown, fine to medium grained sand filling with some gravel and slag up to 60mm in size with trace cobble, moist | | E | 0.6 | | PID <1 | | |
| 1 | | | | | | | | | 1 |
| | | | | E | 1.2 | | PID <1 | | |
| | 1.3 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 30mm in size, moist | | E | 1.5 | | PID <1 | | |
| 2 | | From 2.0m, saturated | | | | | | ▼ | 2 |
| | | | | E | 2.3 | | PID <1 | | |
| | 2.4 | FILLING - Generally comprising grey-brown clay filling, slightly sandy with fine to medium grained sand and with trace glass | | E | 2.7 | | PID <1 | | |
| | 2.8 | SAND - (Medium dense), grey-brown, fine to coarse grained sand with some to abundant shells, saturated | | E | 2.9 | | PID <1 | | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.92m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 104
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel and slag up to 60mm in size with occasional slag cobbles up to 100mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 0.36 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 5mm in size, moist | | E | 0.55 | | PID <1 | | |
| 1 | | | | | | | | | 1 |
| | | From 1.8m, saturated | | | | | | ▼ | |
| | 1.9 | SAND - (Medium dense), brown, fine to coarse grained sand with some shells up to 15mm in size, saturated | | E | 2.0 | | PID <1 | | |
| 2 | | | | | | | | | 2 |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

5 10 15 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 1.8m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.91m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 105
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising brown gravelly sand filling with gravel and slag up to 20mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.45 | FILLING - Generally comprising grey-brown, fine to medium grained sand filling with some shells up to 5mm in size, moist | | | | | | | |
| | 1 | | | E | 1.0 | | PID <1 | | |
| | | From 1.8m, with some to abundant shells | | | | | | | |
| | 2 | | | E | 2.0 | | PID <1 | | |
| | 2.6 | SAND - (Medium dense), grey-brown, fine to coarse grained sand with some to abundant shells, saturated | | | | | | ▼ | |
| | | From 2.8m, grey-brown with trace H2S odour | | | | | | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | E | 3.0 | | PID <1 | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.1m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 106
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 40mm in size, humid to moist | | E | 0.3 | | PID <1 | | |
| | 0.35 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 5mm in size, humid | | E | 0.5 | | PID <1 | | |
| | | At 0.4m, concrete fragments | | | | | | | |
| | | At 0.6m, concrete fragments | | | | | | | |
| | 1 | From 1.2m, moist | | E | 1.5 | | PID <1 | | |
| | 2 | | | | | | | | |
| | 2.3 | FILLING? / SAND (Medium dense), brown, fine to coarse grained sand, possible filling with some to abundant shells up to 15mm in size, saturated | | E | 2.4 | | PID <1 | ▼ | |
| | | From 2.6m, grey | | | | | | | |
| | | From 2.8m, clay in parts | | E | 2.8 | | PID <1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.3m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.31m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 107
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.28 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel up to 40mm in size and possible slag with occasional fragments of gravel in bituminous matrix, concrete and terracotta, moist | | D<br>E | 0.35<br>0.4 | | PID <1 | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with occasional cobbles and boulders up to 20mm in size, moist | | D | 0.7 | | PID <1 | | |
| 1 | 1.0 | Bore discontinued at 1.0m, refusal on obstruction | | | | | | | 1 |
| 2 | | | | | | | | | 2 |
| 3 | | | | | | | | | 3 |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** No free groundwater observed, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.25m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 108
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising dark grey gravelly sand filling with fine to medium grained sand and slag and concrete fragments up to 60mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.75 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells up to 5mm in size, moist | | E | 1.0 | | PID <1 | | |
| | 2 | From 2m, saturated | | E | 2.0 | | PID <1 | ▼ | |
| | 2.8 | CLAYEY SAND - (Medium dense), dark grey clayey sand with fine to coarse grained sand and abundant shells, saturated | | E | 2.9 | | PID <1 | | |
| | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.09m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 109
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 60mm in size, moist | | A, E | 0.4 | | PID<1 | | |
| | 0.7 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells, moist | | A, E | 1.0 | | PID<1 | | |
| | | | | A | 1.5 | | PID<1 | | |
| | | | | E | 2.0 | | PID <1 | | |
| | 2.4 | SAND (Medium dense), brown, fine to coarse grained sand with some shells up to 15mm in size, saturated | | A | 2.5 | | PID<1 | ▼ | |
| | 3.0 | Bore discontinued at 3.0m, limit of investigation | | E, A | 3.0 | | PID <1 | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.4m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.35m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 110
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown gravelly sand / sandy gravel filling with subangular gravel, slag, concrete and brick fragments, up to 60mm in size, moist | | E | 0.4 | | PID <1 | | |
| | | At 0.4m, fibrous fragment, possible ACM | | | | | | | |
| | 0.75 | FILLING - Generally comprising brown, fine to coarse grained sand filling with some shells up to 5mm in size, moist | | E | 0.8 | | PID <1 | | |
| 1 | | | | | | | | | 1 |
| | | From 1.8m, saturated | | | | | | ▼ | |
| 2 | | | | E | 2.2 | | PID <1 | | 2 |
| | 2.6 | SAND - (Medium dense), grey, fine to coarse grained sand with some to abundant shells, saturated | | E | 2.8 | | PID <1 | | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 1.8m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.89m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 111
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel up to 40mm in size with trace brick and steel, moist | | E | 0.3 | | PID <1 | | |
| | 0.35 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells up to 15mm in size, moist | | E | 0.45 | | PID <1 | | |
| | 1 | | | E | 1.3 | | PID <1 | | |
| | 2 | From 2.0m, saturated | | | | | | ▼ | |
| | 2.4 | SAND - Medium dense, grey, fine to coarse grained sand with some to abundant shells, saturated | | E | 2.5 | | PID <1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.33m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 112
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising dark brown sandy gravel filling with subangular gravel, slag, brick and concrete fragments up to 60mm in size with occasional cobbles up to 200mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.6 | Bore discontinued at 0.6m, refusal on obstruction | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** No free groundwater observed, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.72m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 113
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.23 | FILLING - Generally comprising brown sandy gravel filling with subangular igneous gravel and slag up to 40mm in size with trace steel wire, concrete, steel nails, moist | | E | 0.3 | | PID <1 | | |
| | | At 0.6m, bituminous fragment | | D | 0.6 | | | | |
| | 0.75 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells up to 5mm in size, moist | | E | 0.9 | | PID <1 | | |
| 1 | | | | | | | | | 1 |
| 2 | | | | E | 2.2 | | PID <1 | | 2 |
| | | From 2.8m, saturated | | | | | | ▼ | |
| | 2.9 | Bore discontinued at 2.9m, limit of investigation | | | | | | | |
| 3 | | | | | | | | | 3 |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.8m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.6m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 114
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID<1 | | |
| | 0.2 | FILLING - Generally comprising brown, fine to coarse grained gravelly sand filling with subangular gravel and slag up to 40mm in size with trace concrete and coal fragments, moist | | E | 0.3 | | PID<1 | | |
| | 0.45 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some abundant shells up to 20mm in size, moist | | E | 0.55 | | PID<1 | | |
| | 1 | | | | | | | | |
| | 2 | | | E | 2.2 | | PID<1 | | |
| | | From 2.6m, saturated, possible natural | | | | | | ▼ | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

5 10 15 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.25m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 115
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.25 | FILLING - Generally comprising brown sandy gravel filling with occasional fragments of brick and concrete, moist | | E | 0.3 | | PID <1 | | |
| | 0.4 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells up to 5mm in size, moist | | | | | | | |
| | 1 | | | E | 1.0 | | PID <1 | | 1 |
| | 2 | From 2m, saturated | | E | 2.0 | | PID <1 | ▼ | 2 |
| | 2.4 | SAND - (Medium dense), grey-brown, fine to coarse grained sand with some to abundant shells up to 5mm in size, saturated | | | | | | | |
| | | From 2.8m, grey | | E | 2.9 | | PID <1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.08m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 116
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID<1 | | |
| | 0.2 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel, slag, brick and concrete fragments up to 60mm in size with trace steel, moist | | A, E | 0.4 | | PID<1 | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to medium grained sand with some shells up to 5mm in size, saturated | | A, E | 1.0 | | PID<1 | | |
| | 1 | | | A | 1.5 | | PID<1 | ▼ | |
| | | From 1.6m, saturated | | | | | | | |
| | 2 2.0 | SAND - (Medium dense), grey, fine to coarse grained sand with some to abundant shells, saturated | | A, E | 2.0 | | | | |
| | | | | A | 2.5 | | PID<1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | A, E | 3.0 | | PID<1 | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 1.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.36m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 117
**PROJECT No:** 91034.00
**DATE:** 20/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel and slag with concrete fragments up to 60mm in size, trace porcelain, moist | | A, E | 0.4 | | PID <1 | | |
| | 0.7 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 10mm in size, moist | | A, E | 1.0 | | PID <1 | | |
| | | | | A | 1.5 | | PID<1 | | |
| | | | | A, E | 2.0 | | PID<1 | | |
| | 2.4 | SAND - (Medium dense), brown, fine to coarse grained sand with some to abundant shells, saturated | | A | 2.5 | | PID<1 | ▼ | |
| | 3.0 | Bore discontinued at 3.0m, limit of investigation | | A, E | 3.0 | | PID <1 | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.4m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.85m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 118
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising dark brown sandy gravel filling with igneous gravel and concrete fragments up to 60mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 1 1.0 | Bore discontinued at 1.0m, refusal on obstruction | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** No free groundwater observed, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.65m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 119
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | |
| | 0.25 | FILLING - Generally comprising brown gravelly, fine to medium grained sand filling with subangular gravel and slag upto 60mm in size with occasional brick, concrete, steel reinforcement and glass, moist | | E | 0.3 | | PID <1 | | |
| | | | | D | 0.4 | | | | |
| | | From 0.4m, gravel with bituminous matrix fragment | | | | | | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells up to 40mm in size, moist | | E | 0.7 | | PID <1 | | |
| | 1 | | | | | | | | 1 |
| | | | | E | 1.5 | | PID <1 | | |
| | 2 | From 2.0m, possible natural | | | | | | | 2 |
| | 2.3 | SAND - (Medium dense), yellow-brown, fine to coarse grained sand with some to abundant sheels up to 40mm in size, moist to wet | | E | 2.4 | | PID <1 | | |
| | | From 2.7m, saturated | | | | | | ▼ | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.7m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.25m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 120
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.25 | | PID <1 | | |
| | 0.22 | | | E | 0.3 | | PID <1 | | |
| | 0.28 | FILLING - Generally comprising of brown sand filling with subrounded to subangular gravel and slag up to 50mm insize, moist | | | | | | | |
| | | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells up to 30mm in size, moist | | | | | | | |
| | 1 | | | E | 1.0 | | PID <1 | | |
| | | From 1.5m, possible natural | | | | | | | |
| | 2 | | | | | | | | |
| | 2.2 | SAND - (Medium dense), yellow-brown, fine to coarse grained sand with some to abundant shells up to 30mm in size, saturated | | E | 2.3 | | PID <1 | ▼ | |
| | | From 2.7m, grey | | | | | | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.3m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.01m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 121
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising brown gravelly, fine to medium grained sand filling with subangular gravel up to 60mm in size with some slag gravel and trace brick and plastic, moist | | E | 0.3 | | PID <1 | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling, moist | | E | 0.7 | | PID <1 | | |
| | 1 | From 1.0m, fine to coarse grained with some shells up to 5mm in size | | | | | | | |
| | | | | E | 1.5 | | PID <1 | | |
| | 2 | 2.0 SAND - Medium dense, grey-brown, fine to coarse grained sand with some to abundant shells up to 15mm in size, saturated | | | | | | ▼ | |
| | | | | E | 2.3 | | PID <1 | | |
| | | From 2.4m, grey | | | | | | | |
| | 3 | 3.0 Bore discontinued at 3.0m, limit of investigation | | | | | | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.45m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 122
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 0.5 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 60mm in size with some cobbles up to 200mm in size and trace plastic and coal chitter, moist | | A | 0.55 | | | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells, moist | | E | 0.6 | | PID <1 | | |
| | 1 | | | A | 1.0 | | | | |
| | | | | E | 1.4 | | PID <1 | | |
| | | | | A | 1.5 | | | | |
| | 2 | | | A | 2.0 | | PID<1 | | |
| | | | | A | 2.5 | | | | |
| | 2.6 | SAND - (Medium dense), yellow-brown, fine to coarse grained sand with some abundant shells up to 30mm in size, saturated | | E | 2.7 | | PID <1 | ▼ | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | A | 3.0 | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.7m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.85m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 123
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.3 | FILLING - Generally comprising brown gravelly, fine to medium grained sand filling with subangular gravel and slag up to 30mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 0.6 | FILLING - Generally comprising brown, fine to medium grained sand filling with some subangular to subrounded gravel up to 30mm in size and some shells up to 20mm in size, moist | | E | 0.7 | | PID <1 | | |
| | 1.8 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells, moist | | E | 1.9 | | PID <1 | | |
| | 2.6 | SAND - Medium dense, yellow-brown, fine to coarse grained sand with some to abundant shells up to 20mm in size, saturated | | | 2.8 | | PID <1 | ▼ | |
| | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.66m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 124
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.17 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | |
| | | FILLING - Generally comprising grey-brown sandy gravel filling with subangular igneous gravel up to 60mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.45 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 20mm in size, humid | | E | 0.6 | | PID <1 | | |
| | 1 | From 1m, moist | | | | | | | |
| | | | | E | 1.5 | | PID <1 | | |
| | 2 | | | | | | | | |
| | 2.5 | SAND - (Medium dense), brown, fine to coarse grained sand with some shells up to 40mm in size, saturated | | | | | | ▼ | |
| | | From 2.7m to 2.9m, with abundant shells | | E | 2.7 | | PID<1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.29m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 125
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 0.45 | FILLING - Generally comprising brown, fine to medium grained sand filling with some subrounded to subangular gravel up to 20mm in size and clay in parts, moist | | E | 0.5 | | PID <1 | | |
| | 1 | FILLING - Generally comprising yellow-brown, fine to medium grained sand with some shells up to 20mm in size, humid<br>From 1.0m, humid to moist | | | | | | | |
| | | | | E | 1.5 | | PID <1 | | |
| | 2 | | | | | | | | |
| | 2.4 | SAND - (Medium dense), yellow-brown, fine to coarse grained sand with some to abundant shells up to 30mm in size, saturated | | E | 2.6 | | PID <1 | ▼ | |
| | 3 | | | | | | | | |
| | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.4m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 1.99m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 126
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | |
| | 0.45 | FILLING - Generally comprising brown gravelly sand filling with fine to coarse grained sand and subangular gravel and slag up to 60mm in size, moist | | E | 0.4 | | PID <1 | | |
| | | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some shells up to 5mm in size and some gravel, moist | | E | 0.5 | | PID <1 | | |
| 1 | | From 1.0m, sandstone cobbles up to 200mm in size | | E | 1.2 | | PID <1 | | 1 |
| | | | | E | 1.8 | | PID <1 | | |
| 2 | 2.0 | Bore discontinued at 2.0m, refusal on sandstone boulder | | | | | | | 2 |
| 3 | | | | | | | | | 3 |

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** No free groundwater observed, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.38m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 127
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.23 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.3 | | PID <1 | | |
| | | FILLING - Generally comprising brown gravelly sand filling with fine to medium grained sand and subrounded to subangular gravel up to 30mm in size with trace to some shells, moist<br>From 0.5m, with steel fragments<br>At 0.6m, possible ACM fragment | | E | 0.6 | | PID <1 | | |
| | 0.7 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells up to 40mm in size, humid to moist | | E | 0.8 | | PID <1 | | |
| 1 | | | | E | 1.5 | | PID <1 | | |
| 2 | | | | | | | | | |
| | 2.5 | SAND - (Medium dense), grey, fine to coarse grained sand with abundant shells up to 20mm in size, saturated | | E | 2.7 | | PID <1 | ▼ | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |

5 10 15 20

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.5m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.65m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 128
**PROJECT No:** 91034.00
**DATE:** 16/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | D, E | 0.3 | | PID <1 | | |
| | | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 30mm in size with trace brick, wire, moist | | E | 0.4 | | PID <1 | | |
| | 0.5 | At 0.3m, fibrous fragment, possible ACM<br>From 0.4m with some coal chitter | | E | 0.6 | | PID <1 | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 20mm in size, moist | | | | | | | |
| | 1 | | | | | | | | 1 |
| | | | | E | 1.5 | | PID <1 | | |
| | | From 1.8m, with shells up to 30mm in size, moist | | | | | | | |
| | 2 | From 2.0m, possible natural, moist to wet | | | | | | | 2 |
| | 2.6 | SAND - Medium dense, grey, fine to coarse grained sand with some shells, saturated | | E | 2.7 | | PID <1 | ▼ | |
| | | From 2.8m, with abundant shells | | | | | | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.85m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 129
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 40mm in size with trace brick and plastic, moist | | E | 0.3 | | PID <1 | | |
| | | At 0.4m, gravel in bituminous matrix | | D | 0.4 | | | | |
| | 0.55 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 10mm in size, moist | | E | 0.6 | | PID <1 | | |
| | 1 | | | | | | | | 1 |
| | | | | E | 1.5 | | PID <1 | | |
| | 2 | | | | | | | | 2 |
| | 2.6 | SAND - Medium dense, brown, fine to medium grained sand with some shells up to 5mm in size, saturated | | E | 2.7 | | PID <1 | ▼ | |
| | | From 2.7m to 2.8m, with abundant shells up to 15mm in size | | | | | | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.6m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.56m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 130
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.3 | | PID <1 | | |
| | 0.4 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel and slag up to 60mm in size with occasional cobbles, and fine to medium grained sand, with trace steel, moist | | A | 0.5 | | | | |
| | | FILLING - Generally comprising yellow brown, fine to medium grained sand with trace to some shells, moist | | E | 0.6 | | PID <1 | | |
| | 1 | | | A | 1.0 | | | | 1 |
| | | | | E | 1.2 | | PID <1 | | |
| | | | | A | 1.5 | | | | |
| | 2 | From 2.0m, possible natural | | A | 2.0 | | | | 2 |
| | | | | E | 2.1 | | PID <1 | | |
| | | From 2.3m to 2.4m, fine to coarse grained with abundant shells | | | | | | | |
| | | From 2.5m, saturated | | | | | | ▼ | |
| | | | | E | 2.6 | | PID <1 | | |
| | 2.7 | SAND - (Loose), grey, fine to coarse grained sand with some shells up to 10mm in size, saturated | | | | | | | |
| | | | | E | 2.9 | | PID <1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | A | 3.0 | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.5m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.2m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 131
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.1 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.15 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising grey sandy gravel filling with subangular gravel and slag up to 20mm in size, moist | | D | 0.3 | | | | |
| | | FILLING - Generally comprising brown gravelly sand filling with subangular gravel up to 40mm in size and fine to medium grained sand with trace brick and plastic, moist | | E | 0.4 | | PID <1 | | |
| | | At 0.3m, gravel in bituminous matrix | | A | 0.5 | | | | |
| | 0.6 | At 0.55m, gravel in bituminous matrix | | | | | | | |
| | | FILLING - Medium dense to dense, yellow brown, fine to coarse grained sand with some shells up to 5mm in size, moist | | E | 0.7 | | PID <1 | | |
| 1 | | | | A | 1.0 | | | | 1 |
| | | | | A, E | 1.5 | | PID <1 | | |
| 2 | | From 2.0m, saturated | | A, E | 2.0 | | | ▼ | 2 |
| | | | | E | 2.4 | | PID <1 | | |
| | 2.6 | SAND - (Medium dense), grey, fine to coarse grained sand with some shells up to 10mm in size, saturated | | E | 2.8 | | PID <1 | | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | A | 3.0 | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.13m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 132
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.02 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.14 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | |
| | 0.25 | FILLING - Generally comprising grey, fine to medium grained sandy gravel and slag filling with subangular gravel and slag up to 40mm in size, moist | | E | 0.3 | | PID <1 | | |
| | | | | E | 0.4 | | PID <1 | | |
| | | | | E | 0.45 | | PID <1 | | |
| | | FILLING - Generally comprising gravelly fine to medium grained sand filling with subangular gravel up to 40mm in size with trace tile, concrete, moist | | ASS D | 0.5 | | | | |
| | 0.6 | At 0.3m, gravel in bituminous matrix fragments | | | | | | | |
| | | At 0.45m, gravel in bituminous matrix fragments | | | | | | | |
| | | At 0.5m, gravel in bituminous matrix fragments | | E | 0.8 | | PID <1 | | |
| 1 | 1.0 | FILLING - Generally comprising brown gravelly, fine to medium grained sand filling with some sandstone cobbles up to 200mm in size and trace to some shells, moist | | | | | | | 1 |
| | | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some sand and cobbles up to 200mm in size and trace to some shells up to 5mm in size, moist | | E | 1.1 | | PID <1 | | |
| | | | | E, ASS | 1.5 | | PID <1 | | |
| | | | | E, ASS | 1.9 | | PID <1 | | |
| 2 | 2.0 | Bore discontinued at 2.0m, refusal on sandstone boulder | | | | | | | 2 |
| 3 | | | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** No free groundwater observed, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.45m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 133
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | |
| | 0.12 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | E | 0.1 | | PID <1 | | |
| | 0.22 | FILLING - Generally comprising grey, fine to medium grained sandy gravel and slag filling with subangular gravel and slag up to 40mm in size, moist | | E | 0.2 | | PID <1 | | |
| | | FILLING - Generally comprising brown sandy gravel / gravelly sand with fine to medium grained sand and subrounded to subangular gravel, slag and concrete up to 60mm in size, moist | | E | 0.4 | | PID <1 | | |
| | 0.7 | FILLING - Generally comprising yellow-brown, fine to medium grained sand filling with some subangular gravel up to 40mm in size, and shells up to 20mm in size, moist | | E | 0.8 | | PID <1 | | |
| 1 | 1.1 | FILLING- Medium dense, yellow-brown, fine to coarse grained sand with trace to some shells up to 20mm in size, moist | | E | 1.3 | | PID <1 | | 1 |
| | | | | E | 1.6 | | PID <1 | | |
| 2 | | From 2.2m, saturated double natural | | E | 2.1 | | PID <1 | ▼ | 2 |
| | | | | E | 2.6 | | PID <1 | | |
| 3 | 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | 3 |

**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.2m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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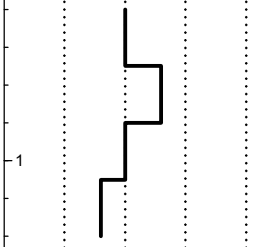
# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.75m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 134
**PROJECT No:** 91034.00
**DATE:** 15/12/2016
**SHEET** 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Dynamic Penetrometer Test (blows per 150mm) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | E | 0.05 | | PID <1 | | |
| | 0.2 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | |
| | | FILLING - Generally comprising brown gravelly sand filling with fine to coarse grained sand and subangular gravel and slag up to 40mm in size with trace to some shells, saturated | | E | 0.4 | | PID <1 | | |
| | 0.45 | | | E | 0.5 | | PID <1 | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some shells up to 10mm in size, moist | | | | | | | |
| | 1 | | | E | 1.1 | | PID <1 | | |
| | | From 1.3m, with some gravel and slag up to 40mm in size | | E | 1.4 | | PID <1 | | |
| | | At 1.5m, metal fragment | | | | | | | |
| | | | | E | 1.9 | | PID <1 | | |
| | 2 | From 2.2m, possible natural, wet | | E | 2.4 | | PID <1 | ▼ | |
| | | From 2.5m, saturated | | | | | | | |
| | 2.7 | SAND - (Medium dense), light grey, fine to medium grained sand with trace to some shells up to 5mm in size, saturated | | E | 2.9 | | PID <1 | | |
| | 3 3.0 | Bore discontinued at 3.0m, limit of investigation | | | | | | | |




**RIG:** 3.5 tonne excavator **DRILLER:** Paice **LOGGED:** West **CASING:** Nil

**TYPE OF BORING:** 300mm diameter solid flight auger

**WATER OBSERVATIONS:** Free groundwater observed at 2.5m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

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

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.10m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 103W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.23 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.5 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 60mm in size with some shells up to 5mm in size, moist | | | | | | | |
| | 1 | FILLING - Generally comprising grey-brown, fine to medium grained sand filling with some gravel and slag up to 60mm in size with trace cobble, moist | | E,PID, ASS | 1.0 | | 2,12,13 N = 25 PID <1 | | 1 |
| | 1.3 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 30mm in size, moist | | | 1.45 | | | | |
| | 2 | From 2.0m, saturated | | | | | | ▼ | 2 |
| | 2.4 | FILLING - Generally comprising grey-brown clay filling, slightly sandy with fine to medium grained sand and with trace glass | | E,PID, ASS | 2.5 | | PID <1 | | From 0.4m to 5.0m, gravel From 0.5m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | 2.8 | SAND - (Loose), grey-brown, fine to coarse grained sand with some to abundant shells, saturated | | | 2.95 | | | | |
| | 3 3.0 | SAND - Loose, fine to coarse grained sand with some shell fragments, saturated | | | | | | | 3 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.0m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.10m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 103W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - Loose, fine to coarse grained sand with some shell fragments, saturated *(continued)* | | E,PID, ASS | 4.0 | | PID <1 | | |
| | 4.3 | SANDY CLAY - (Soft), dark grey, fine to medium grained sandy clay, trace shell fragments, M>Wp, (estuarine deposit) | | | 4.45 | | | | |
| | 4.5 | SAND - (Loose), dark grey, fine grained sand with some clay, saturated (estuarine deposit) | | | | | | | |
| 5 | 5.0 | Bore discontinued at 5.0m, limit of investigation | | | | | | | End cap |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.0m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.63m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 114W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.45 | FILLING - Generally comprising brown, fine to coarse grained gravelly sand filling with subangular gravel and slag up to 40mm in size with trace concrete and coal fragments, moist | | | | | | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some abundant shells up to 20mm in size, moist | | | | | | | |
| | 1 | | | E,PID, ASS | 1.0 | | 3,6,9 N = 15 PID <1 | | |
| | | | | | 1.45 | | | | |
| | | From 1.9m, saturated | | | | | | ▼ | |
| | 2 | | | | | | | | |
| | | From 2.6m, possible natural | | E,PID, ASS | 2.5 | | 2,4,4 N = 8 PID <1 | | From 0.4m to 5.0m, gravel From 0.5m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | | | | | 2.95 | | | | |
| | 3 3.0 | SAND - (Loose), brown, fine to coarse grained sand with some shell fragments, saturated | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 1.9m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.63m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 114W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - (Loose), brown, fine to coarse grained sand with some shell fragments, saturated *(continued)* | | | 4.0 | | | | |
| | | From 4m, dark grey | | E,PID, ASS | | | PID <1 | | |
| | | | | | 4.45 | | | | |
| 5 | | | | | | | | | End cap |
| | | | | | 5.5 | | | | |
| | | | | E,PID, ASS | | | 0,1,6 N = 7 PID <1 | | |
| | 5.95 | | | | 5.95 | | | | |
| 6 | | Bore discontinued at 5.95m, limit of investigation | | | | | | | |
| 7 | | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 1.9m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.14m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 116W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | | FILLING - Generally comprising brown sandy gravel filling with subangular gravel, slag, brick and concrete fragments up to 60mm in size with trace steel, moist | | | | | | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to medium grained sand with some shells up to 5mm in size, saturated | | | | | | | |
| 1 | | | | E,PID, ASS | 1.0 | | 4,7,10 N = 17 PID <1 | | 1 |
| | | | | | 1.45 | | | | |
| | | From 1.6m, saturated | | | | | | | |
| 2 | 2.0 | SAND - (Medium dense), grey, fine to coarse grained sand with some to abundant shells, saturated | | | | | | ▼ | 2 |
| | | | | E,PID, ASS | 2.5 | | 1,3,4 N = 7 PID <1 | | From 0.4m to 5.0m, gravel From 0.4m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| 3 | | | | | 2.95 | | | | 3 |
| | 3.2 | CLAYEY SAND - (Loose), dark grey, fine to coarse grained clayey sand, some silt, (estuarine deposit), trace shell fragments, saturated | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.14m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 116W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | CLAYEY SAND - (Loose), dark grey, fine to coarse grained clayey sand, some silt, (estuarine deposit), trace shell fragments, saturated *(continued)* | | E,PID, ASS | 4.0 | | PID <1 | | |
| | 4.5 | CLAYEY SILT - (Soft), dark grey clayey silt with some fine to coarse grained sand (estuarine deposit), M>Wp | | | 4.45 | | | | |
| 5 | 5.0 | SAND - (Loose), grey, fine to coarse grained sand, trace shell fragments | | | 5.5 | | | | End cap |
| | | | | E,PID, ASS | | | PID <1 | | |
| | 5.95 | Bore discontinued at 5.95m, limit of investigation | | | 5.95 | | | | |
| 6 | | | | | | | | | 6 |
| 7 | | | | | | | | | 7 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.62m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 130W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.4 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel and slag up to 60mm in size with occasional cobbles, and fine to medium grained sand, with trace steel, moist | | | | | | | |
| | | FILLING - Generally comprising yellow brown, fine to medium grained sand with trace to some shells, moist | | | | | | | |
| | 1 | | | | 1.0 | | | | 1 |
| | | | | E | | | 7,11,12 N = 23 PID <1 | | |
| | | | | | 1.45 | | | | |
| | 2 | From 2.0m, possible natural | | | | | | ▼ | 2 |
| | | From 2.3m to 2.4m, fine to coarse grained with abundant shells | | | | | | | |
| | | From 2.5m, saturated | | | 2.5 | | | | |
| | 2.7 | SAND - (Loose), grey, fine to coarse grained sand with some shells up to 10mm in size, saturated | | E | | | PID <1 | | From 0.4m to 5.0m, gravel From 0.4m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | 2.8 | SAND - (Loose), dark grey, fine to coarse grained sand, some shell fragments, with estuarine deposits, saturated | | | 2.95 | | | | |
| | 3 | | | | | | | | 3 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.62m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 130W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - (Loose), dark grey, fine to coarse grained sand, some shell fragments, with estuarine deposits, saturated *(continued)* | | | 4.0 | | | | |
| | | From 4.3m, trace to some silt | | E | | | PID <1 | | |
| | 5 | | | | 4.45 | | | | End cap |
| | | | | | 5.5 | | | | |
| | | | | E | | | PID <1 | | |
| | 5.95 | Bore discontinued at 5.95m, limit of investigation | | | 5.95 | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.10m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 103W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.23 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.5 | FILLING - Generally comprising brown gravelly sand filling with subangular gravel and slag up to 60mm in size with some shells up to 5mm in size, moist | | | | | | | |
| | | FILLING - Generally comprising grey-brown, fine to medium grained sand filling with some gravel and slag up to 60mm in size with trace cobble, moist | | | | | | | |
| | 1 | | | E,PID, ASS | 1.0 | | 2,12,13 N = 25 PID <1 | | 1 |
| | 1.3 | FILLING - Generally comprising yellow-brown, fine to coarse grained sand filling with some shells up to 30mm in size, moist | | | 1.45 | | | | |
| | 2 | From 2.0m, saturated | | | | | | ▼ | 2 |
| | 2.4 | FILLING - Generally comprising grey-brown clay filling, slightly sandy with fine to medium grained sand and with trace glass | | | 2.5 | | | | |
| | | | | E,PID, ASS | | | PID <1 | | From 0.4m to 5.0m, gravel From 0.5m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | 2.8 | SAND - (Loose), grey-brown, fine to coarse grained sand with some to abundant shells, saturated | | | 2.95 | | | | |
| | 3 3.0 | SAND - Loose, fine to coarse grained sand with some shell fragments, saturated | | | | | | | 3 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.0m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.10m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 103W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - Loose, fine to coarse grained sand with some shell fragments, saturated *(continued)* | | E,PID, ASS | 4.0 | | PID <1 | | |
| | 4.3 | SANDY CLAY - (Soft), dark grey, fine to medium grained sandy clay, trace shell fragments, M>Wp, (estuarine deposit) | | | 4.45 | | | | |
| | 4.5 | SAND - (Loose), dark grey, fine grained sand with some clay, saturated (estuarine deposit) | | | | | | | |
| 5 | 5.0 | Bore discontinued at 5.0m , limit of investigation | | | | | | | End cap |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.0m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.63m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 114W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.45 | FILLING - Generally comprising brown, fine to coarse grained gravelly sand filling with subangular gravel and slag up to 40mm in size with trace concrete and coal fragments, moist | | | | | | | |
| | | FILLING - Generally comprising yellow-brown, fine to coarse grained sand with some abundant shells up to 20mm in size, moist | | | | | | | |
| | 1 | | | E,PID, ASS | 1.0 | | 3,6,9 N = 15 PID <1 | | |
| | | | | | 1.45 | | | | |
| | | From 1.9m, saturated | | | | | | ▼ | |
| | 2 | | | | | | | | |
| | | From 2.6m, possible natural | | E,PID, ASS | 2.5 | | 2,4,4 N = 8 PID <1 | | From 0.4m to 5.0m, gravel From 0.5m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | | | | | 2.95 | | | | |
| | 3 3.0 | SAND - (Loose), brown, fine to coarse grained sand with some shell fragments, saturated | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 1.9m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.63m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 114W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - (Loose), brown, fine to coarse grained sand with some shell fragments, saturated *(continued)* | | | 4.0 | | | | |
| | | From 4m, dark grey | | E,PID, ASS | | | PID <1 | | |
| | | | | | 4.45 | | | | |
| 5 | | | | | | | | | End cap |
| | | | | | 5.5 | | | | |
| | | | | E,PID, ASS | | | 0,1,6 N = 7 PID <1 | | |
| | 5.95 | Bore discontinued at 5.95m , limit of investigation | | | 5.95 | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 1.9m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.14m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 116W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | | FILLING - Generally comprising brown sandy gravel filling with subangular gravel, slag, brick and concrete fragments up to 60mm in size with trace steel, moist | | | | | | | |
| | 0.6 | FILLING - Generally comprising yellow-brown, fine to medium grained sand with some shells up to 5mm in size, saturated | | | | | | | |
| 1 | | | | E,PID, ASS | 1.0 | | 4,7,10 N = 17 PID <1 | | 1 |
| | | | | | 1.45 | | | | |
| | | From 1.6m, saturated | | | | | | | |
| 2 | 2.0 | SAND - (Medium dense), grey, fine to coarse grained sand with some to abundant shells, saturated | | | | | | ▼ | 2 |
| | | | | E,PID, ASS | 2.5 | | 1,3,4 N = 7 PID <1 | | From 0.4m to 5.0m, gravel From 0.4m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| 3 | | | | | 2.95 | | | | 3 |
| | 3.2 | CLAYEY SAND - (Loose), dark grey, fine to coarse grained clayey sand, some silt, (estuarine deposit), trace shell fragments, saturated | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.14m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 116W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | CLAYEY SAND - (Loose), dark grey, fine to coarse grained clayey sand, some silt, (estuarine deposit), trace shell fragments, saturated *(continued)* | | E,PID, ASS | 4.0 | | PID <1 | | |
| | 4.5 | CLAYEY SILT - (Soft), dark grey clayey silt with some fine to coarse grained sand (estuarine deposit), M>Wp | | | 4.45 | | | | |
| 5 | 5.0 | SAND - (Loose), grey, fine to coarse grained sand, trace shell fragments | | | 5.5 | | | | End cap |
| | | | | E,PID, ASS | | | PID <1 | | |
| | 5.95 | Bore discontinued at 5.95m , limit of investigation | | | 5.95 | | | | |
| 6 | | | | | | | | | 6 |
| 7 | | | | | | | | | 7 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil
**TYPE OF BORING:** Solid flight auger to 5.95m
**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering
**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.62m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 130W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 1 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | Spray Seal (Bitumen) | | | | | | | From 0m to 0.2m, concrete |
| | 0.2 | FILLING - Generally comprising brown, fine to medium grained sandy gravel and slag filling with subangular gravel and slag fragments up to 40mm in size, moist | | | | | | | From 0m to 0.5m, Class 18 PVC From 0.2m to 0.4m, bentonite |
| | 0.4 | FILLING - Generally comprising brown sandy gravel filling with subangular gravel and slag up to 60mm in size with occasional cobbles, and fine to medium grained sand, with trace steel, moist | | | | | | | |
| | | FILLING - Generally comprising yellow brown, fine to medium grained sand with trace to some shells, moist | | | | | | | |
| | 1 | | | E | 1.0 | | 7,11,12 N = 23 PID <1 | | 1 |
| | | | | | 1.45 | | | | |
| | 2 | From 2.0m, possible natural | | | | | | ▼ | 2 |
| | | From 2.3m to 2.4m, fine to coarse grained with abundant shells | | | | | | | |
| | | From 2.5m, saturated | | | 2.5 | | | | |
| | 2.7 | SAND - (Loose), grey, fine to coarse grained sand with some shells up to 10mm in size, saturated | | E | | | PID <1 | | From 0.4m to 5.0m, gravel From 0.4m to 5.0m, 50mm diameter Class 18 machine slotted PVC screen |
| | 2.8 | SAND - (Loose), dark grey, fine to coarse grained sand, some shell fragments, with estuarine deposits, saturated | | | 2.95 | | | | |
| | 3 | | | | | | | | 3 |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil
**TYPE OF BORING:** Solid flight auger to 5.95m
**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering
**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# BOREHOLE LOG

**CLIENT:** Doma Holdings (NSW) Pty Ltd
**PROJECT:** Proposed Residential Development
**LOCATION:** 21 Honeysuckle Drive, Newcastle

**SURFACE LEVEL:** 2.62m AHD*
**EASTING:**
**NORTHING:**
**DIP/AZIMUTH:** 90°/--

**BORE No:** 130W
**PROJECT No:** 91034.00
**DATE:** 19/12/2016
**SHEET** 2 OF 2

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing: Type | Depth | Sample | Results & Comments | Water | Well Construction Details |
|---|---|---|---|---|---|---|---|---|---|
| | | SAND - (Loose), dark grey, fine to coarse grained sand, some shell fragments, with estuarine deposits, saturated *(continued)* | | | 4.0 | | | | |
| | | From 4.3m, trace to some silt | | E | | | PID <1 | | |
| | 5 | | | | 4.45 | | | | End cap |
| | | | | | 5.5 | | | | |
| | | | | E | | | PID <1 | | |
| | 5.95 | Bore discontinued at 5.95m , limit of investigation | | | 5.95 | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |

**RIG:** Truck mounted FG101 **DRILLER:** Fico **LOGGED:** Benson **CASING:** Nil

**TYPE OF BORING:** Solid flight auger to 5.95m

**WATER OBSERVATIONS:** Free groundwater observed at 2.0m, whilst augering

**REMARKS:** * Surface levels interpolated from survey plan provided by client

**SAMPLING & IN SITU TESTING LEGEND**

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

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 1.9 AHD

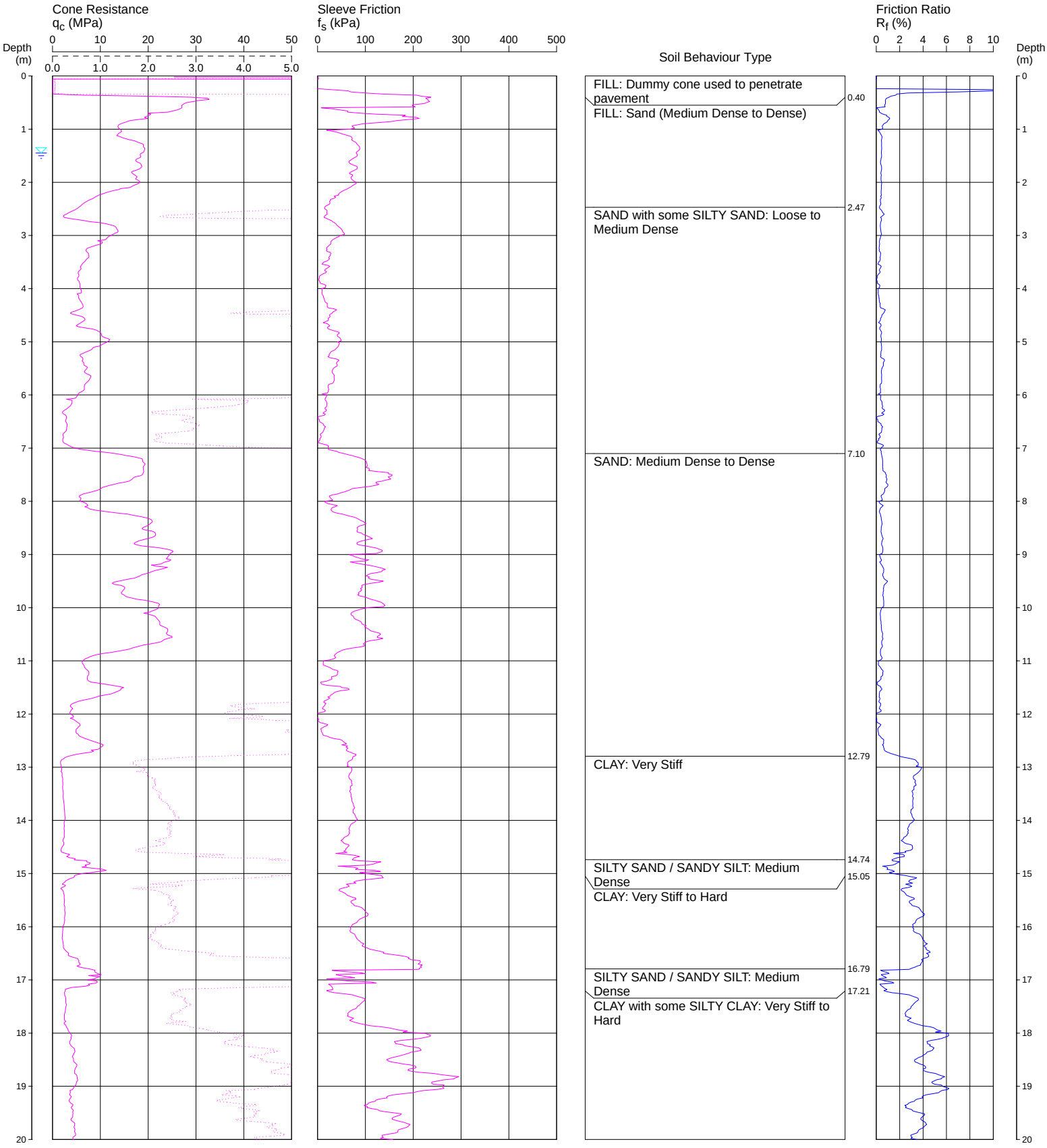
**COORDINATES:** 384758E 6356298N MGA Zone 56

**201**



**DATE** 20/12/2016

**PROJECT No:** 91034




**REMARKS:** DUMMY CONE USED FROM 0.1 m TO 0.4 m DEPTH TO PENETRATE ROADBASE
TEST DISCONTINUED DUE TO CONE TIP REFUSAL AND BENDING IN WEATHERED ROCK, GROUNDWATER OBSERVED AT 1.45 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 1.45m depth (measured)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\201.CP5

**Cone ID:** 120621 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 1.9 AHD

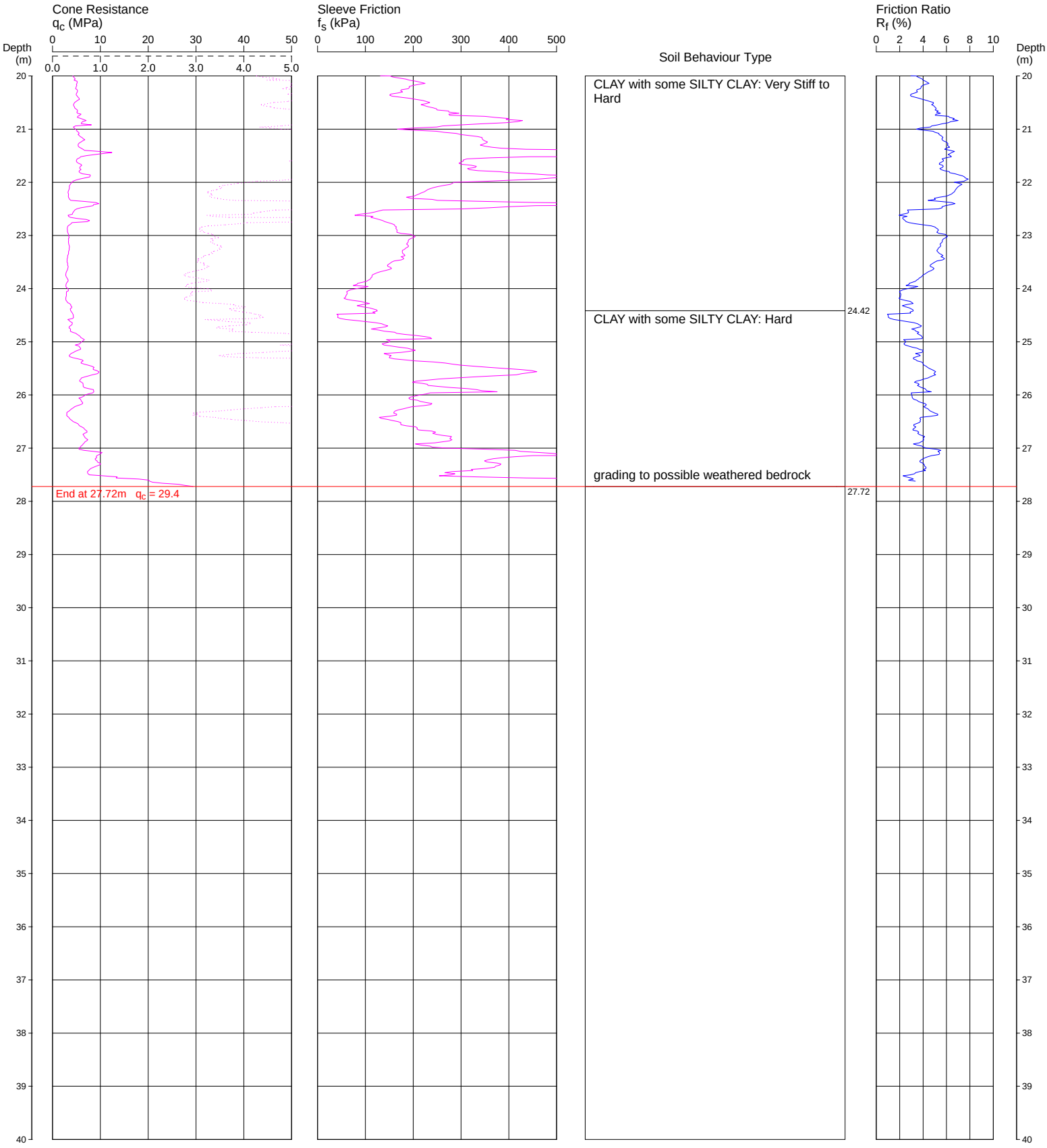
**COORDINATES:** 384758E 6356298N MGA Zone 56

**201**

**Page 2 of 2**

**DATE** 20/12/2016

**PROJECT No:** 91034




**REMARKS:** DUMMY CONE USED FROM 0.1 m TO 0.4 m DEPTH TO PENETRATE ROADBASE
TEST DISCONTINUED DUE TO CONE TIP REFUSAL AND BENDING IN WEATHERED ROCK, GROUNDWATER OBSERVED AT 1.45 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 1.45m depth (measured)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\201.CP5

**Cone ID:** 120621 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 1.9 AHD

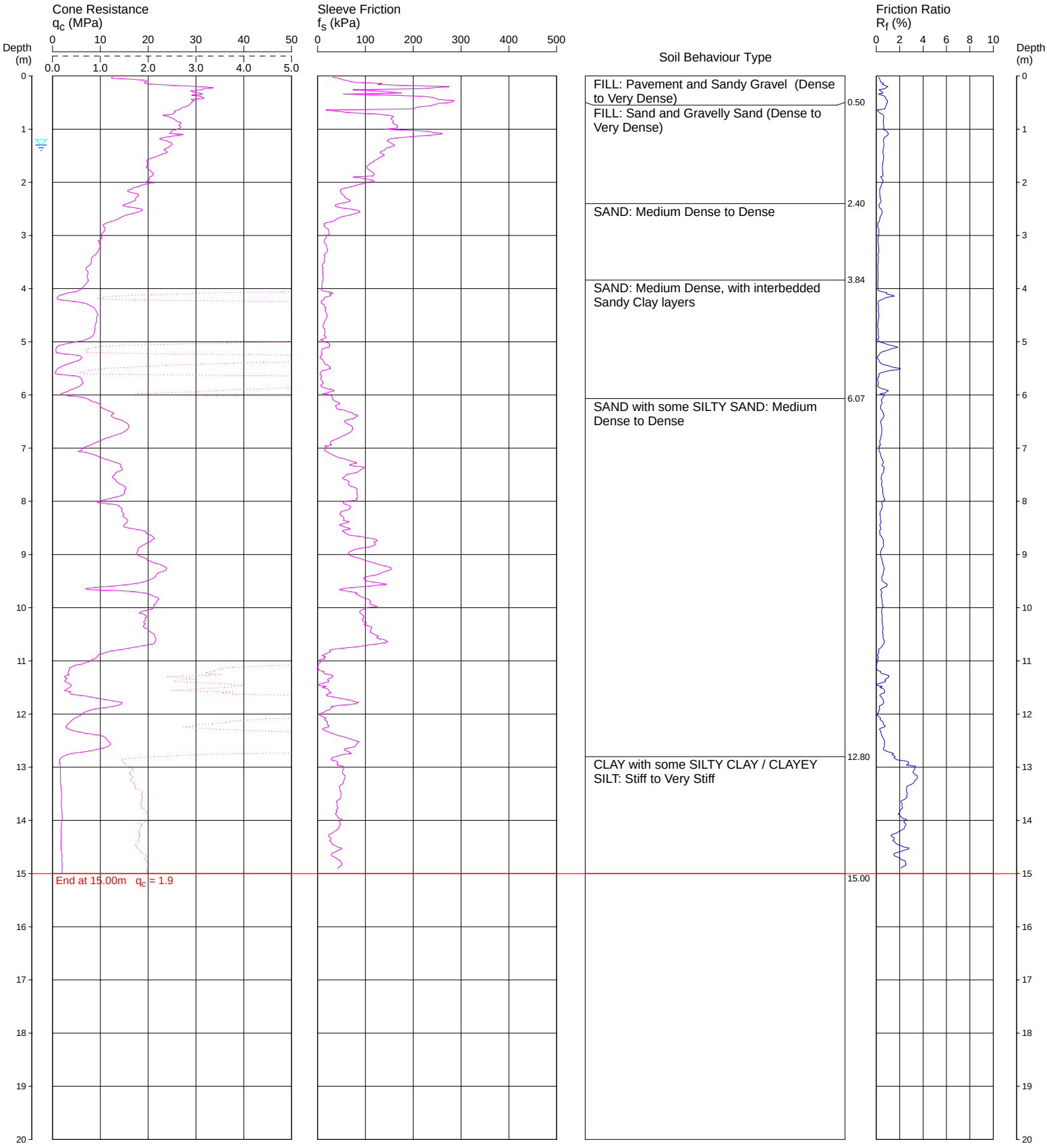
**COORDINATES:** 384724E 6356296N MGA Zone 56

**202**

**Page 1 of 1**

**DATE** 20/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO TARGET DEPTH REACHED
HOLE COLLAPSED AT 1.3 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 1.30m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\202.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

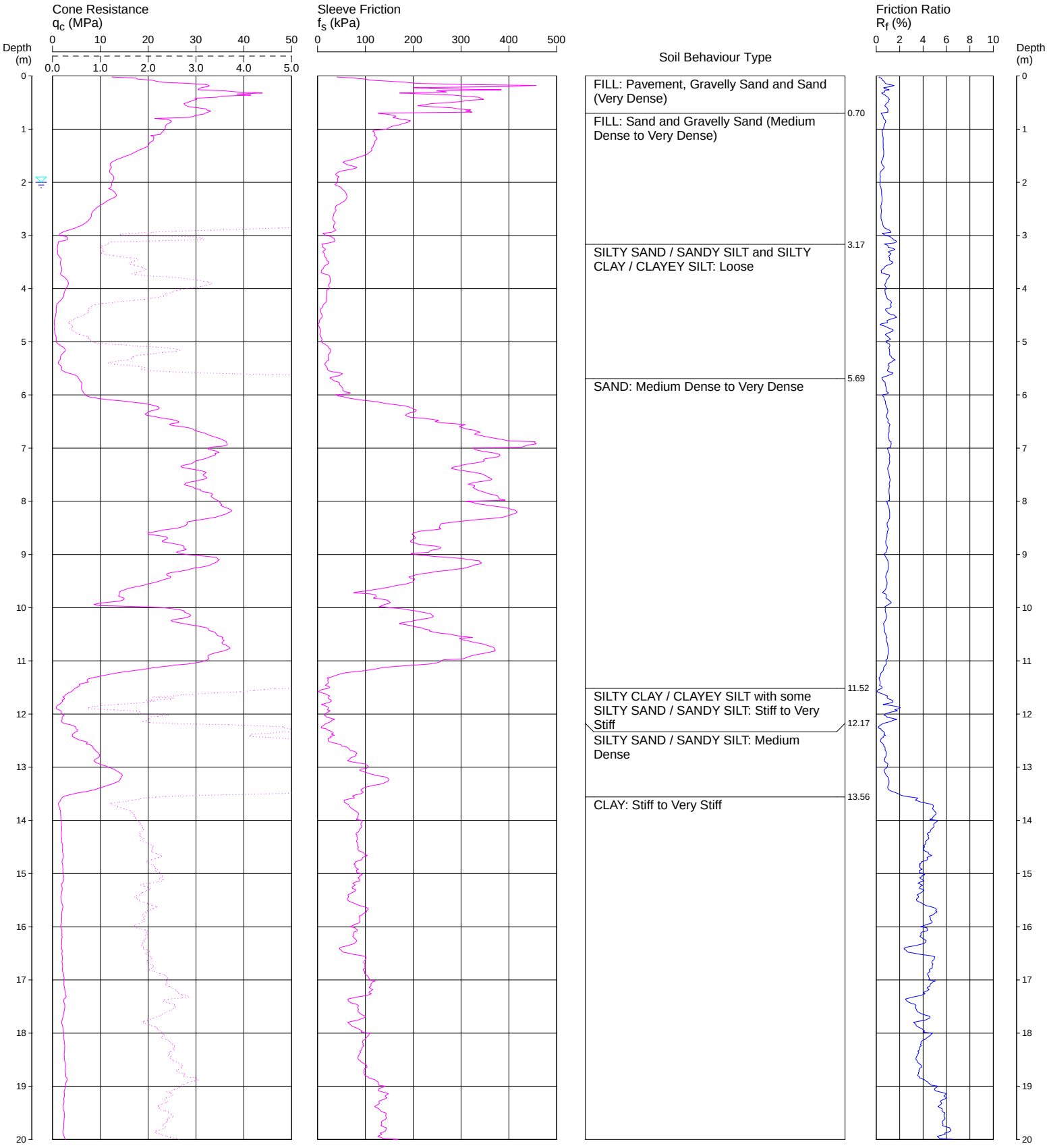
**COORDINATES:** 384696E 6356297N MGA Zone 56

**203**

**Page 1 of 2**

**DATE** 20/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN WEATHERED ROCK
HOLE COLLAPSED AT 1.7 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.00m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\203.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

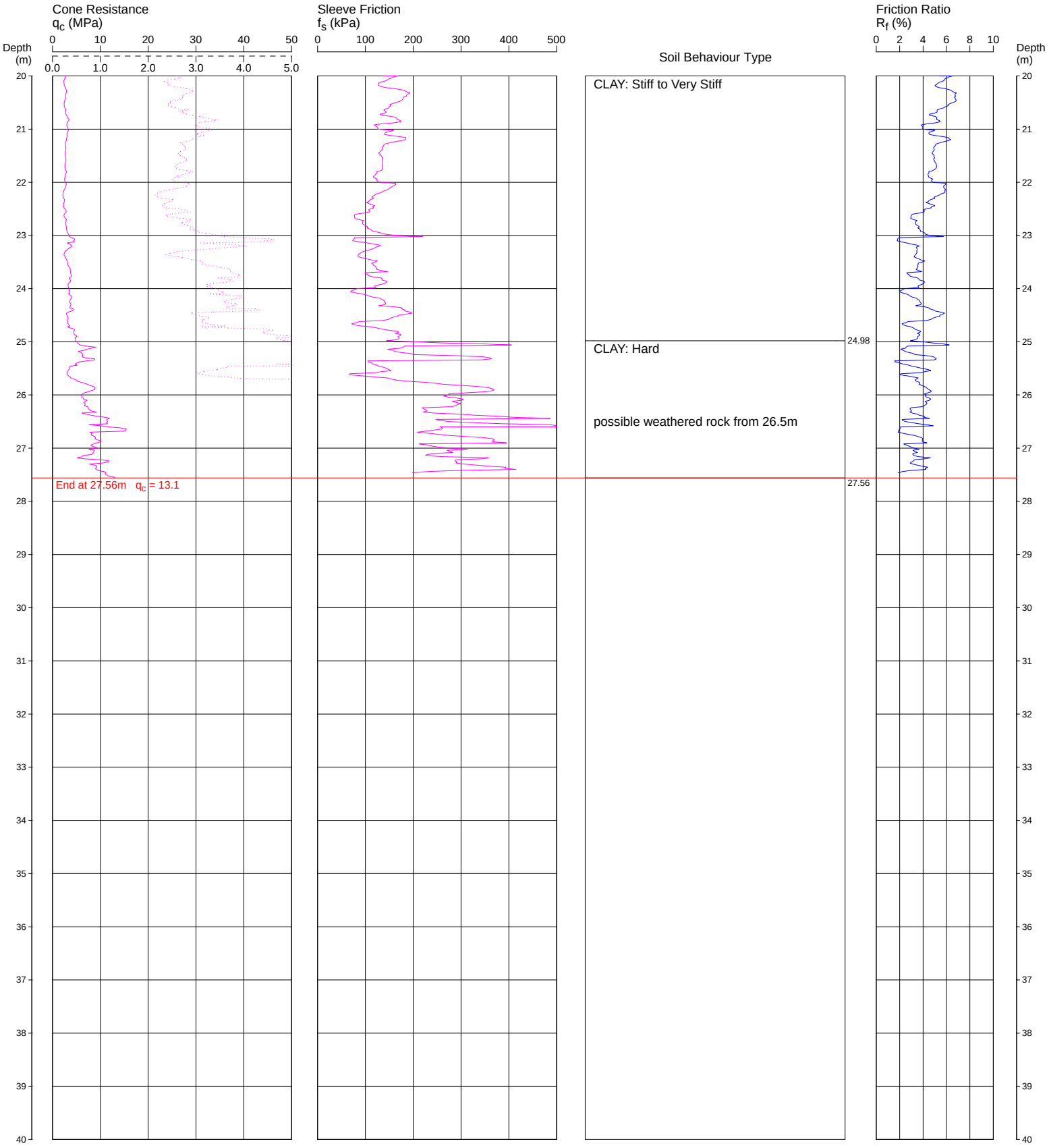
**COORDINATES:** 384696E 6356297N MGA Zone 56

**203**



**DATE** 20/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN WEATHERED ROCK
HOLE COLLAPSED AT 1.7 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.00m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\203.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

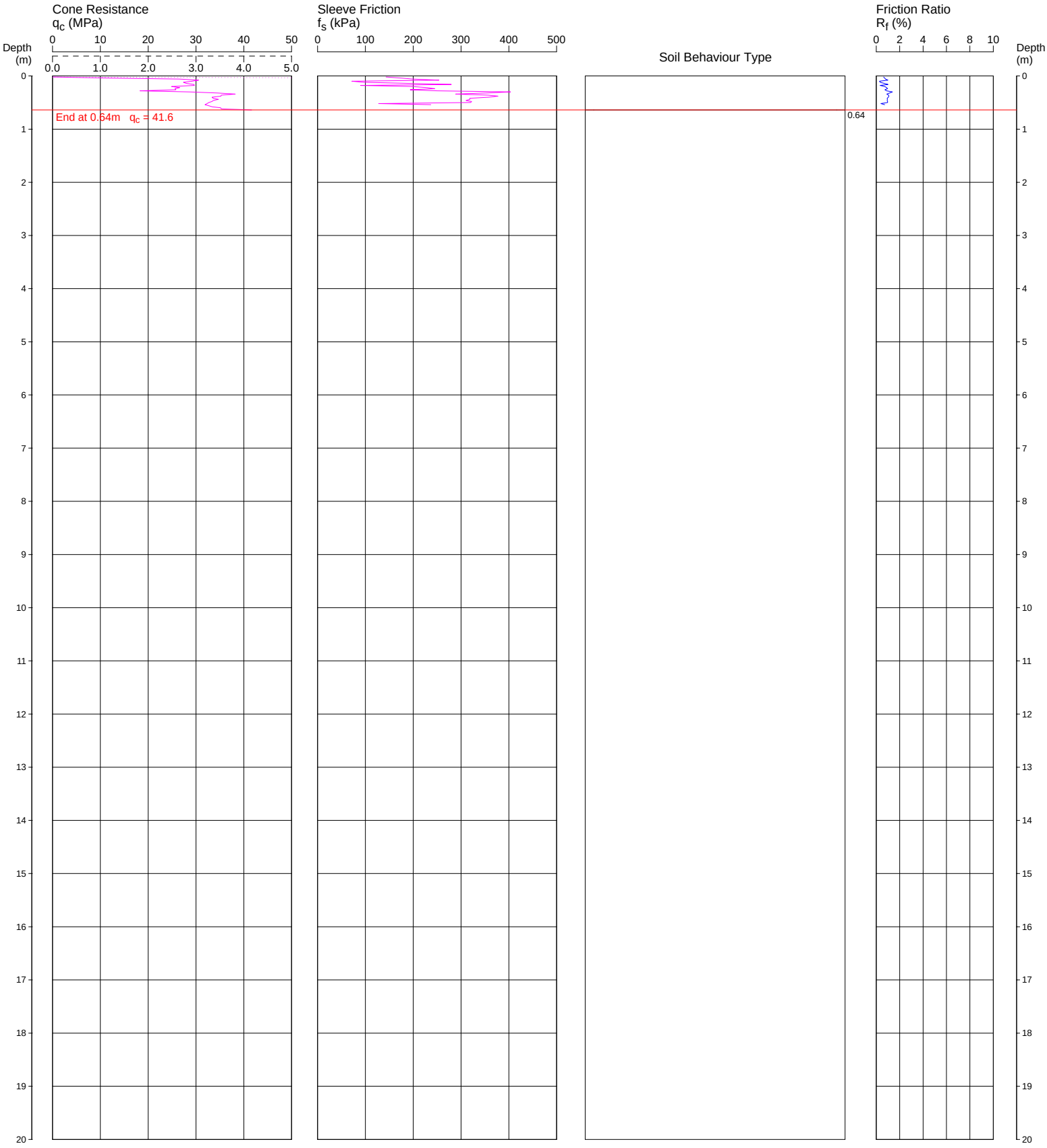
**COORDINATES:** 384660E 6356300N MGA Zone 56

**204**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN FILLING, TEST MOVED 0.5 m EAST AND RECOMMENCED AT 204A
NO GROUNDWATER OBSERVED AFTER WITHDRAWAL OF RODS

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\204.CP5
**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2
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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

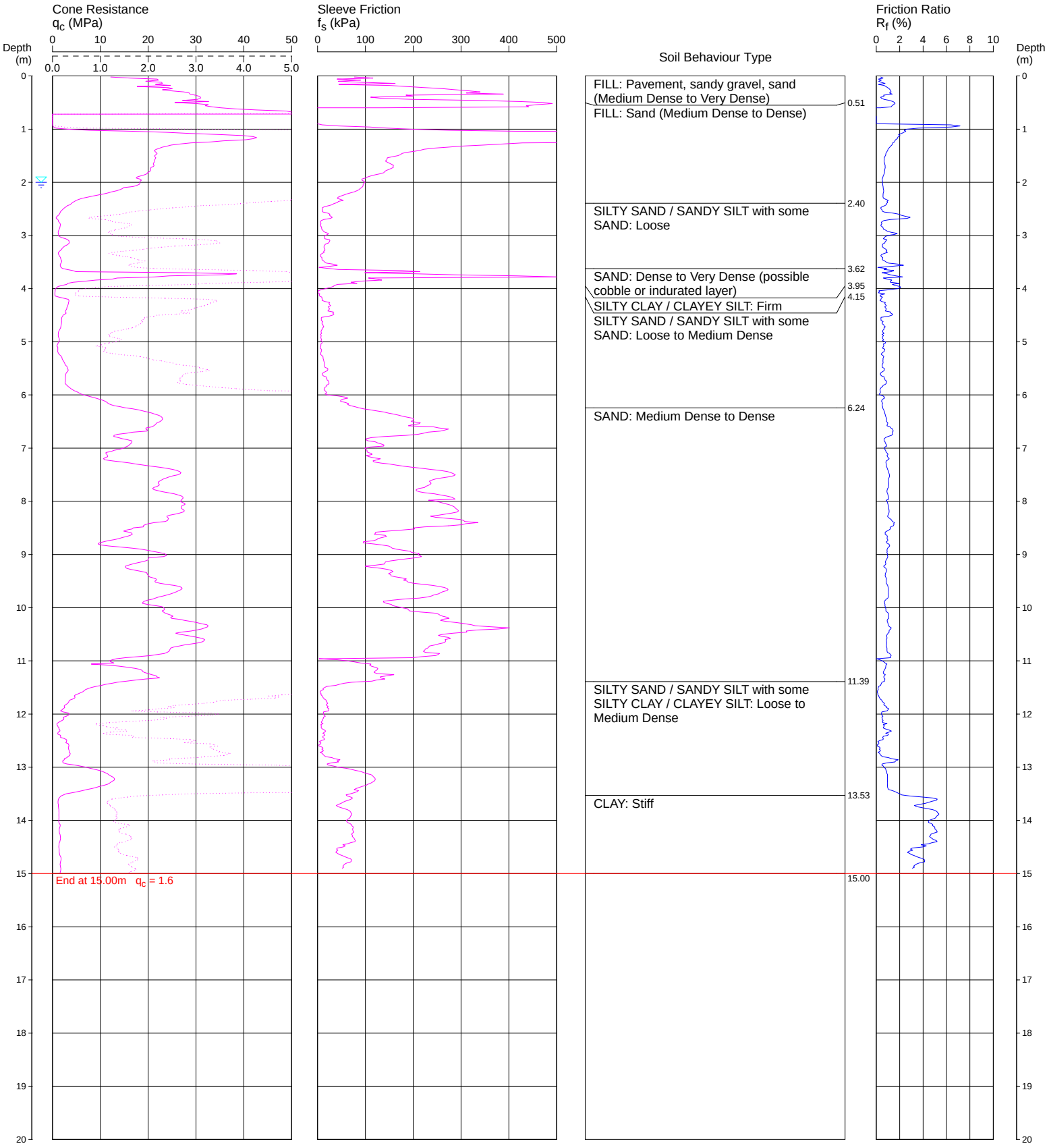
**COORDINATES:** 384660E 6356300N MGA Zone 56

**204**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** DUMMY CONE USED FROM 0.7 m TO 1.2 m DEPTH TO PENETRATE FILLING
TEST DISCONTINUED DUE TO TARGET DEPTH REACHED, HOLE COLLAPSED AT 1.6 m DEPTH AFTER WITHDRWAWAL OF RODS

**Water depth after test: 2.00m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\204A.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

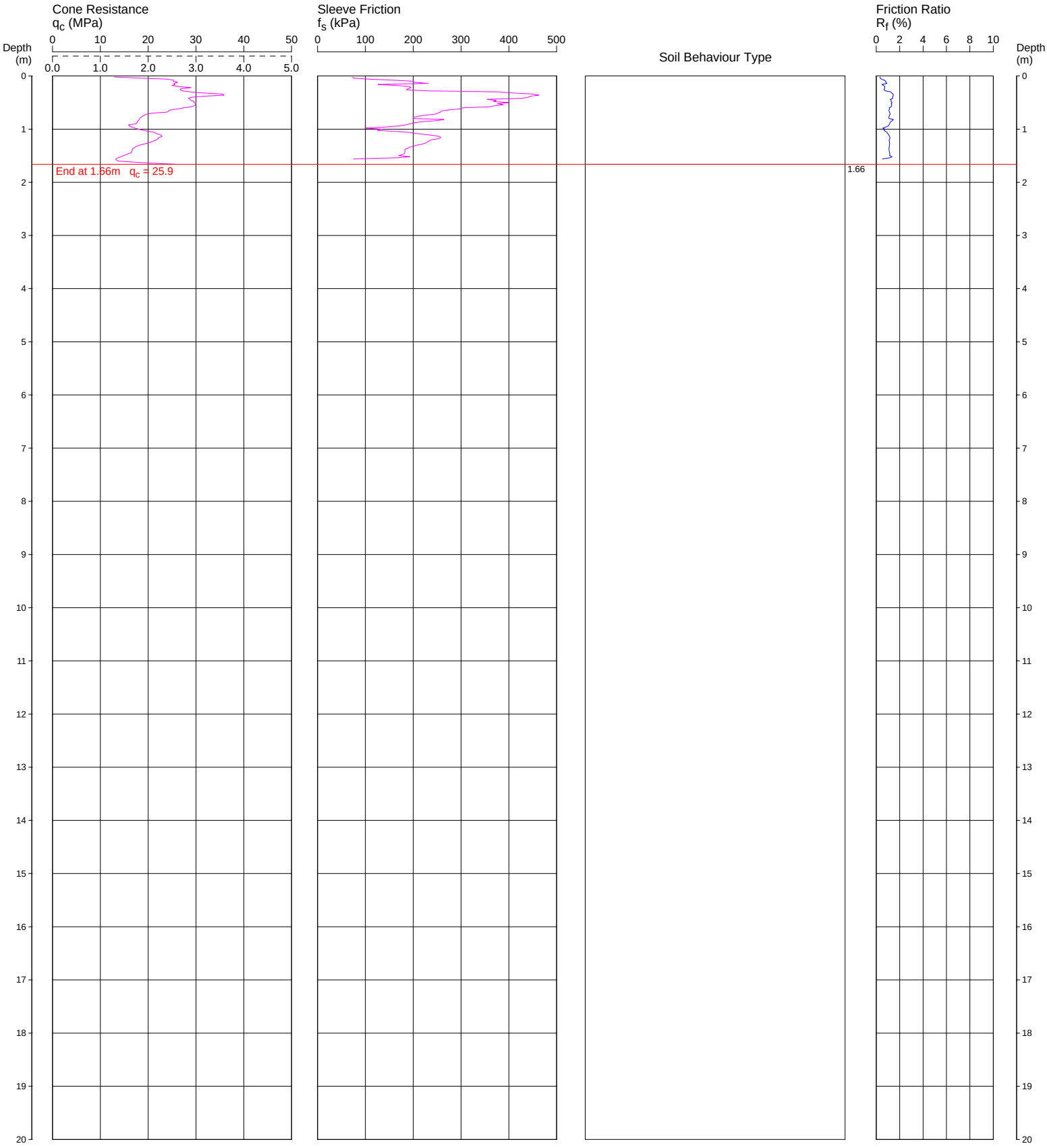
**COORDINATES:** 384630E 6356304N MGA Zone 56

**205**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN FILLING, TEST MOVED 0.5 m WEST AND RECOMMENCED AT 205A
NO GROUNDWATER OBSERVED AFTER WITHDRAWAL OF RODS

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\205.CP5
**Cone ID:** 120630 **Type:** I-CFXY-10

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1

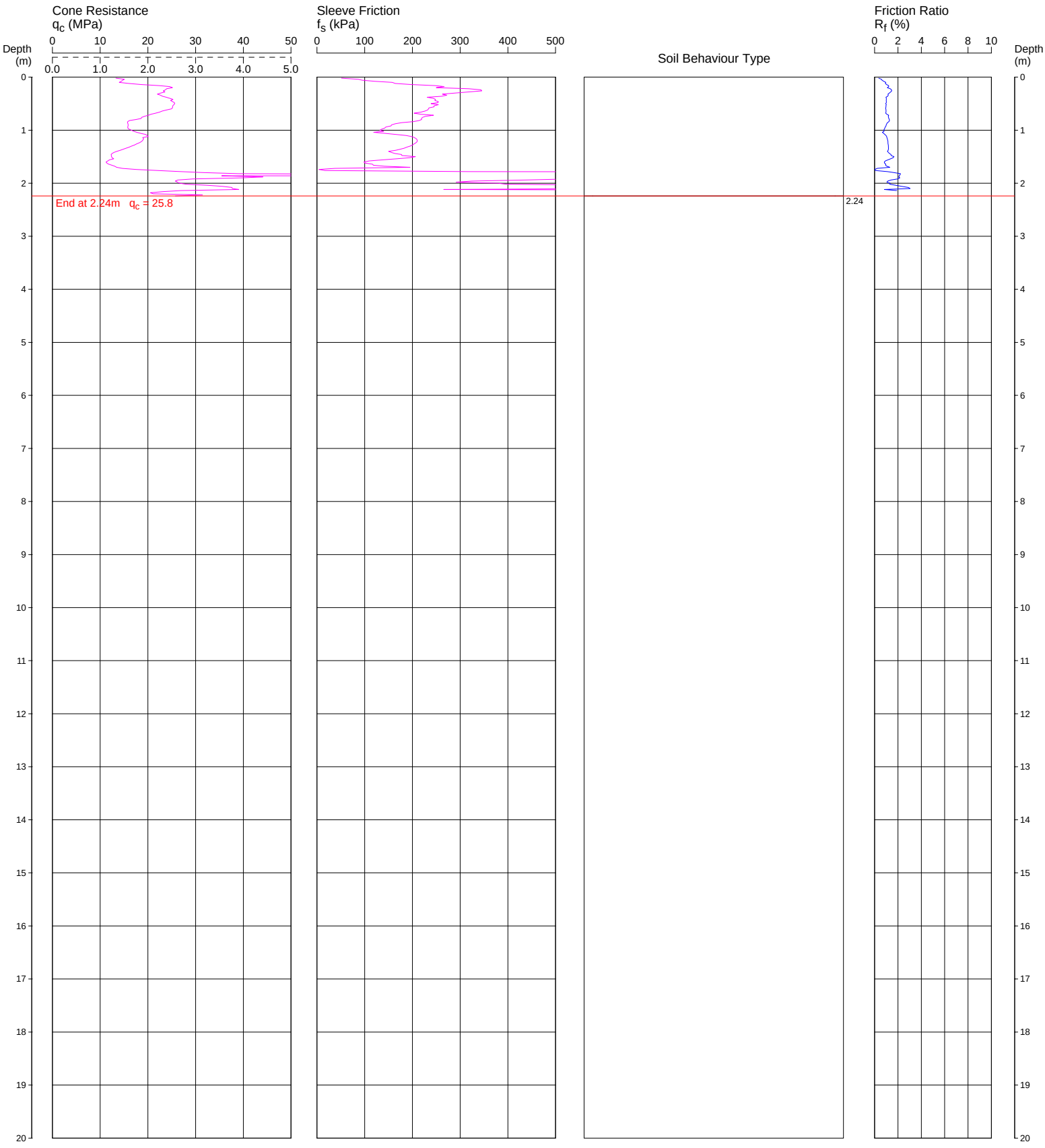
**COORDINATES:**

**205A**



**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN FILLING, TEST MOVED 1.0 m EAST AND RECOMMENCED AT 205B
GROUNDWATER DEPTH NOT MEASURED

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\205A.CP5
**Cone ID:** 120630 **Type:** I-CFXY-10

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:**

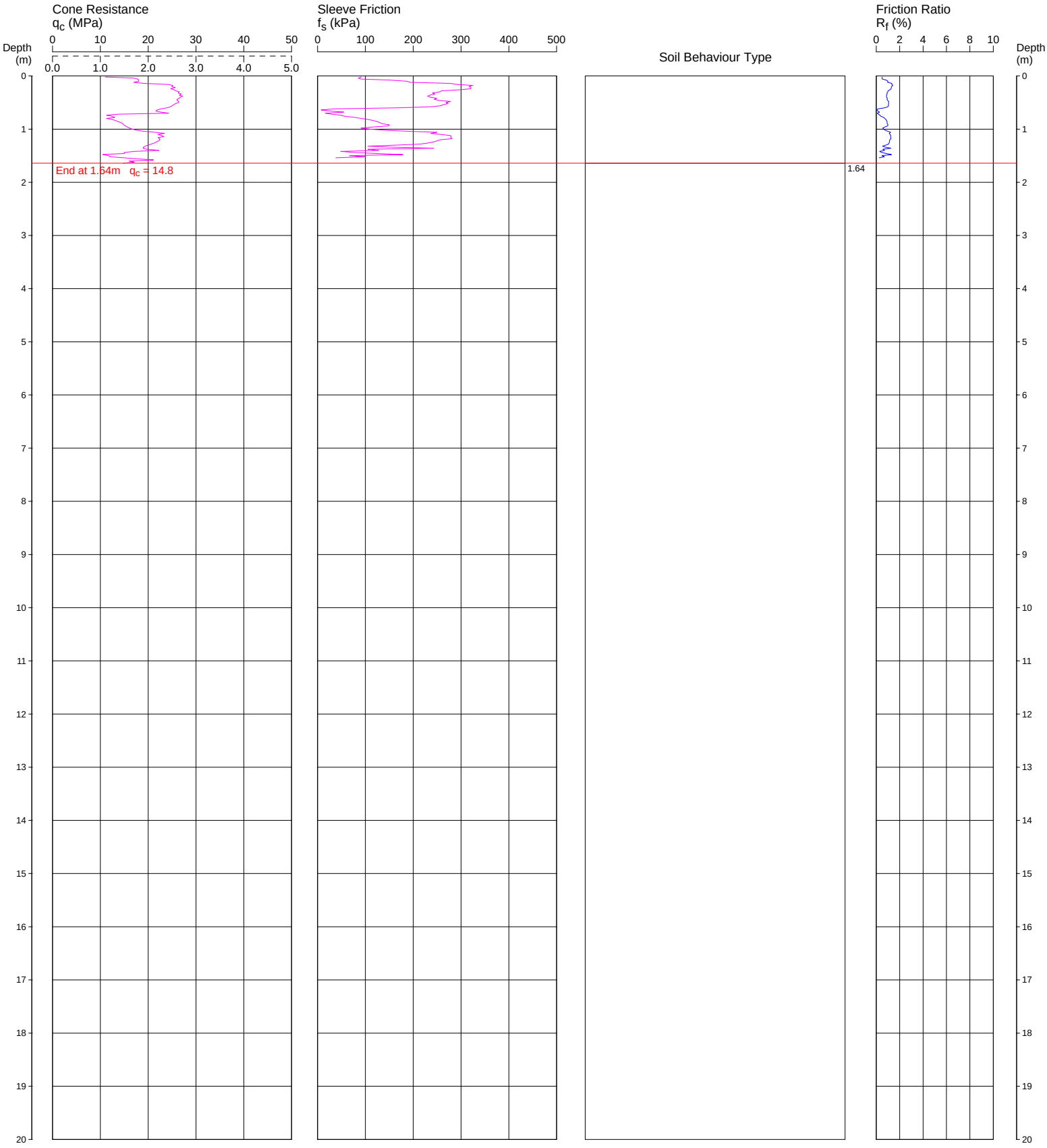
**COORDINATES:**

**205B**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO BENDING IN FILLING, TEST MOVED 0.5 m EAST AND RECOMMENCED AT 205C
NO GROUNDWATER OBSERVED AFTER WITHDRAWAL OF RODS

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\205B.CP5
**Cone ID:** 120630 **Type:** I-CFXY-10

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

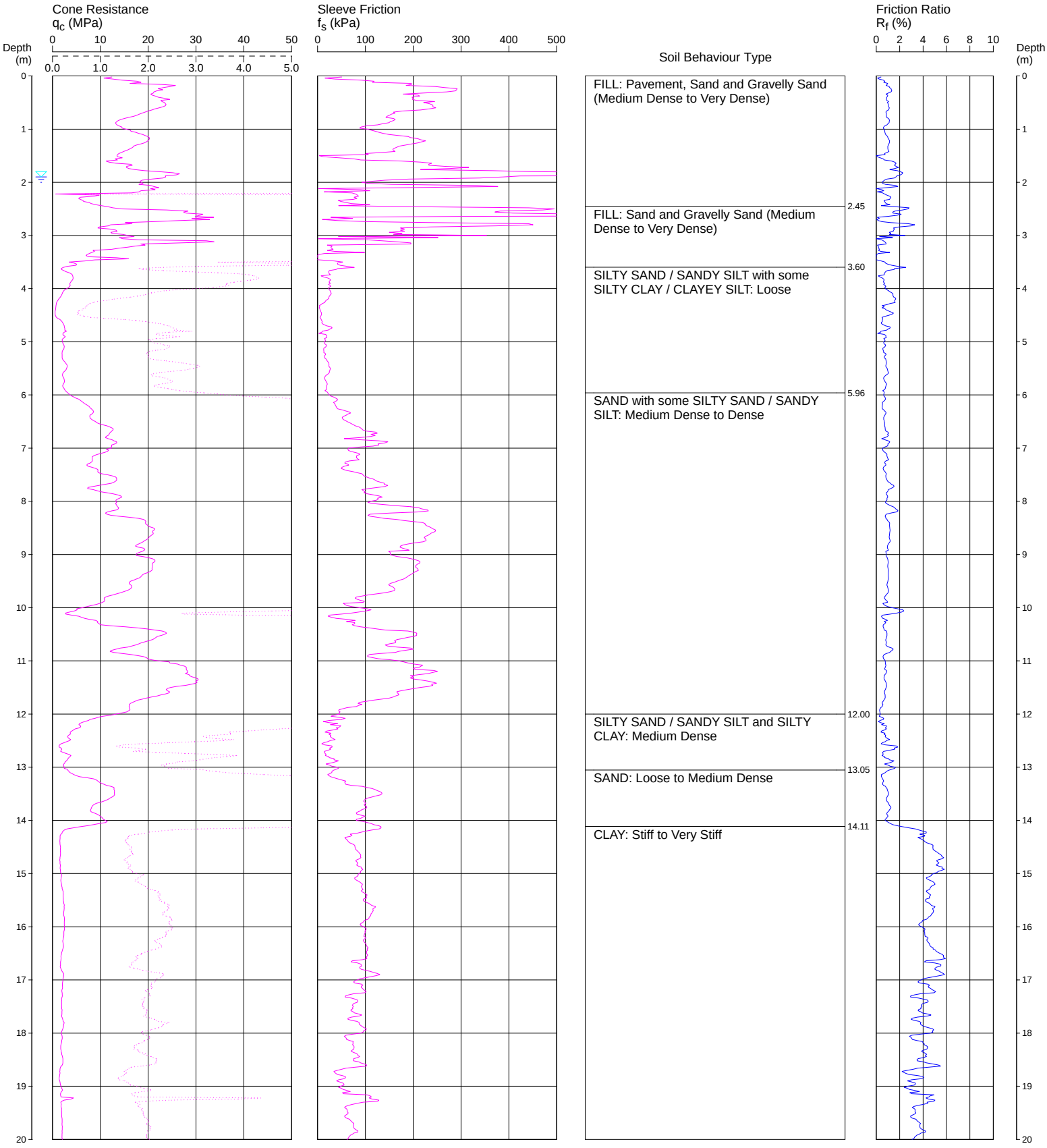
**COORDINATES:** 384629E 6356304N MGA Zone 56

**205**



**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING
GROUNDWATER OBSERVED AT 1.9 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 1.90m depth (measured)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\205C.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.1 AHD

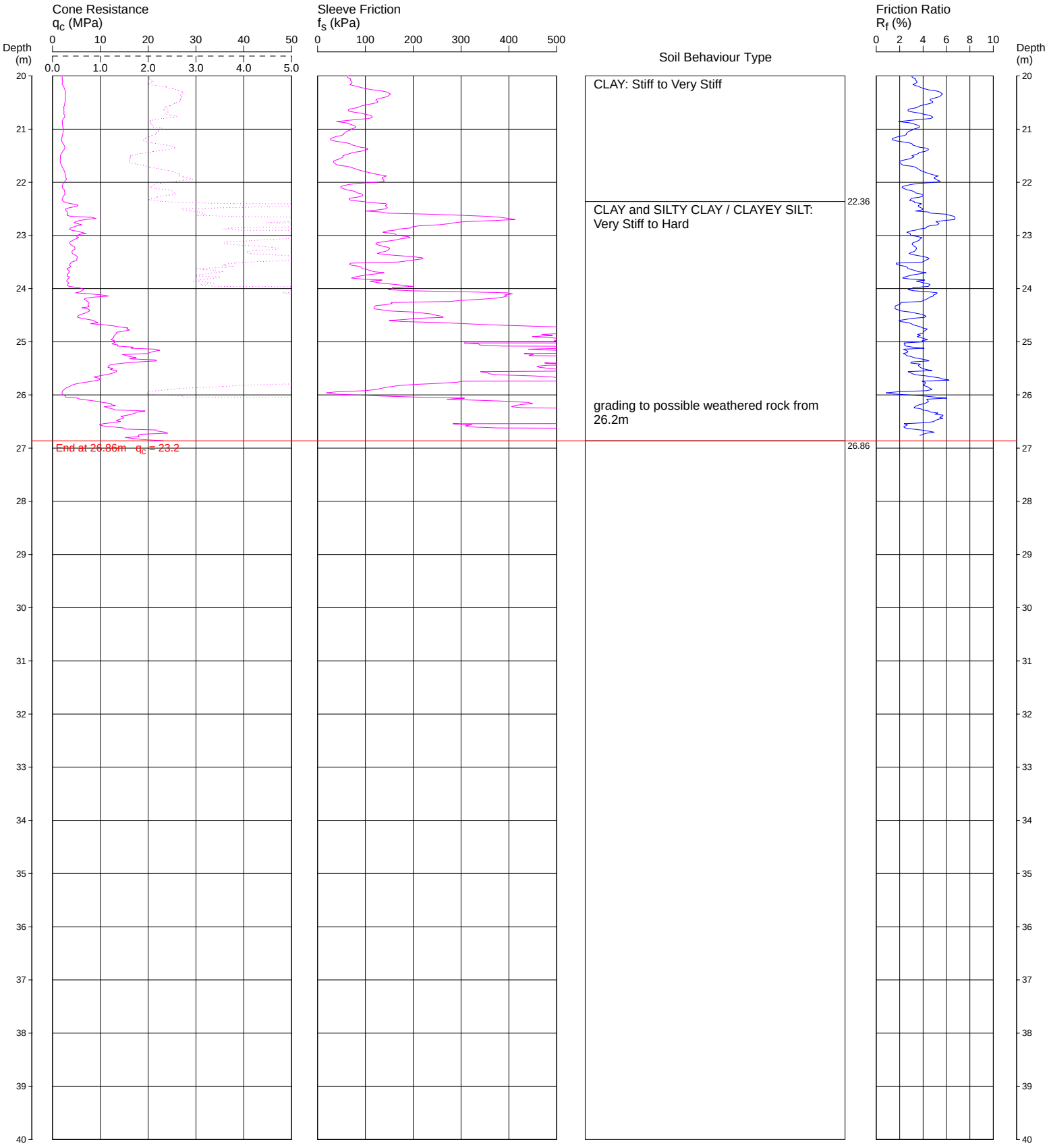
**COORDINATES:** 384629E 6356304N MGA Zone 56

**205**



**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO EXCESSIVE ROD BOWING
GROUNDWATER OBSERVED AT 1.9 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 1.90m depth (measured)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\205C.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.9 AHD

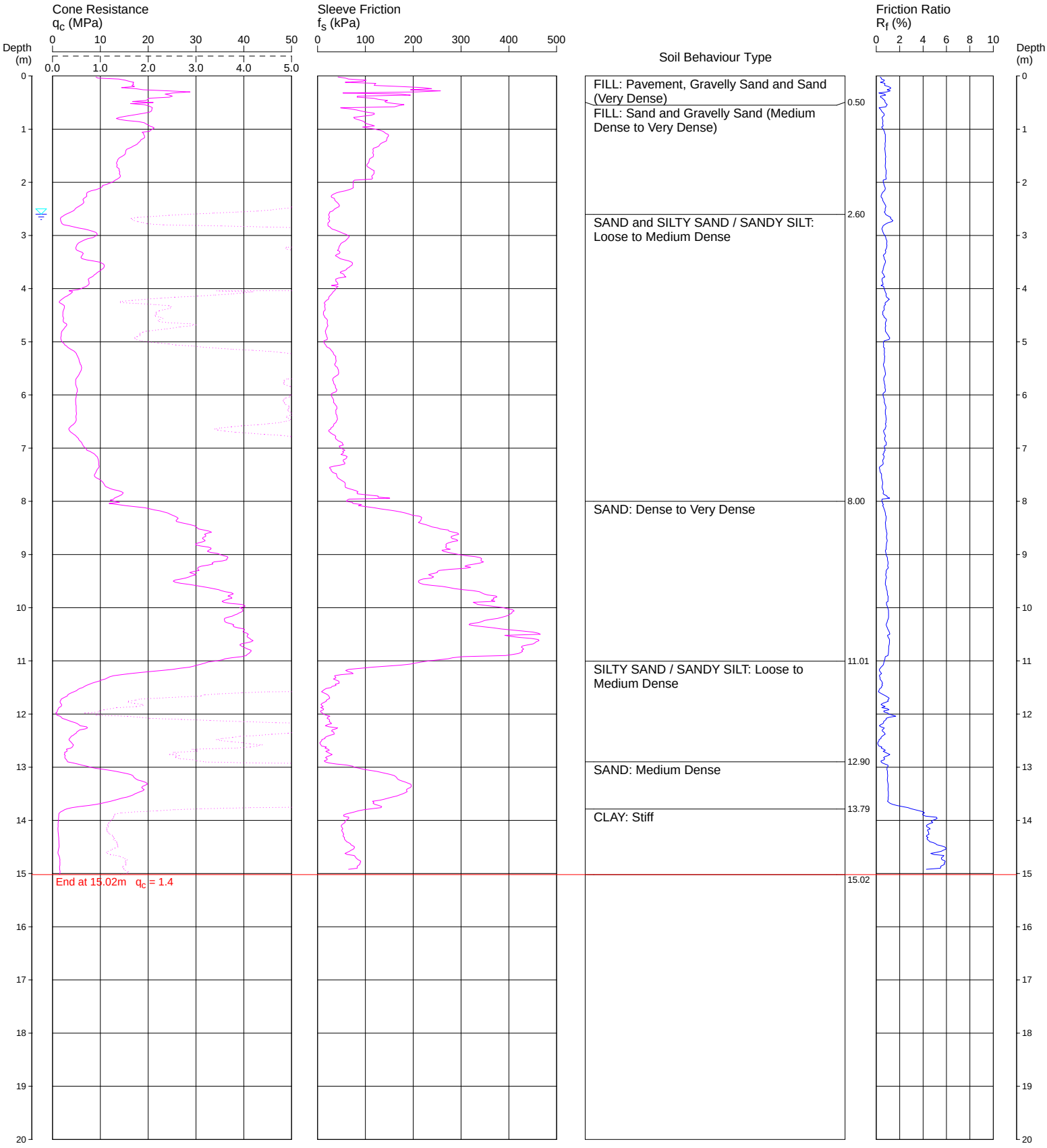
**COORDINATES:** 384635E 6356262N MGA Zone 56

**206**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO TARGET DEPTH REACHED
HOLE COLLAPSED AT 2.2 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.60m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\206.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.9 AHD

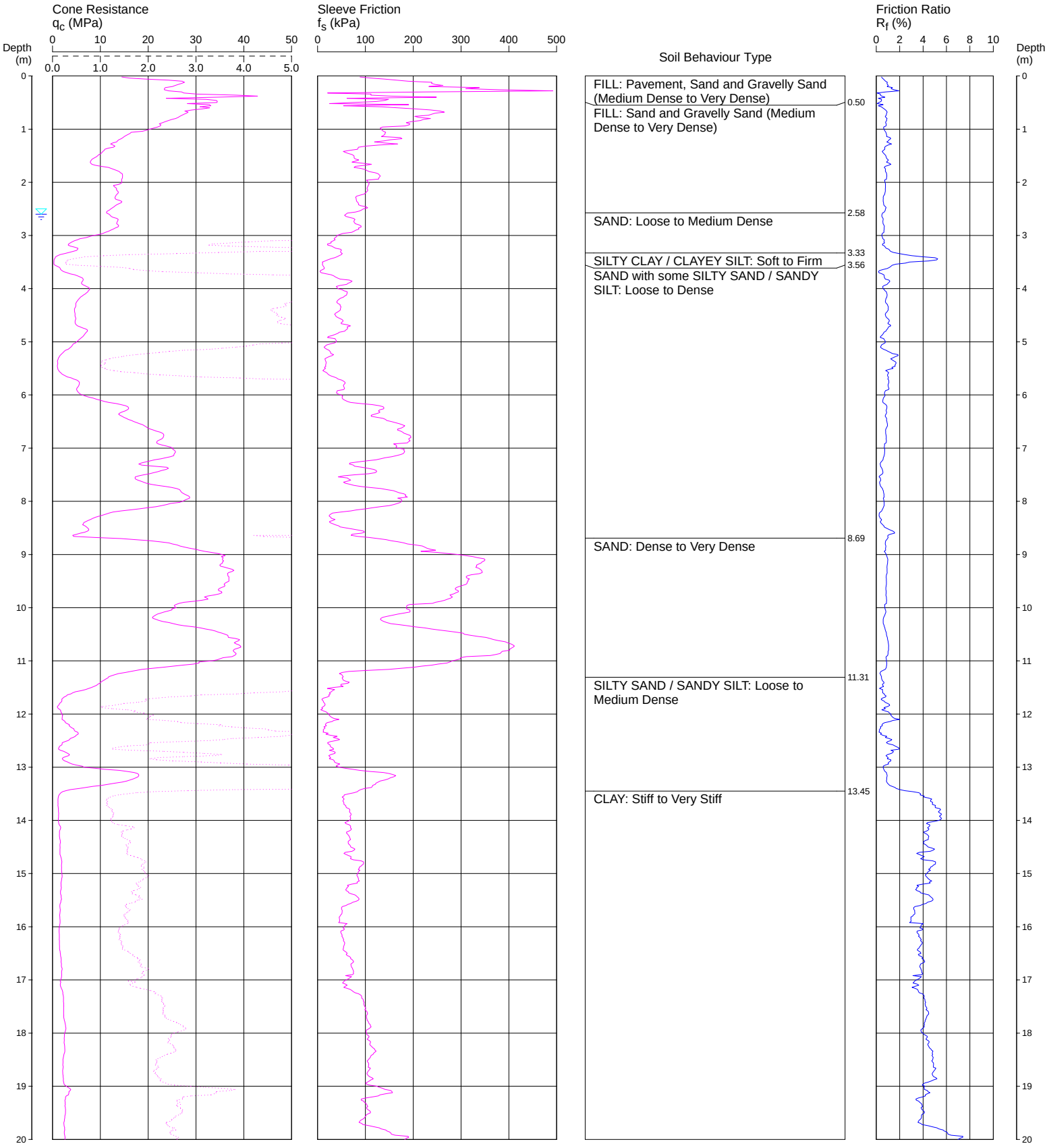
**COORDINATES:** 384674E 6356257N MGA Zone 56

**207**



**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO CONE TIP REFUSAL
HOLE COLLAPSED AT 2.45 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.60m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\207.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.9 AHD

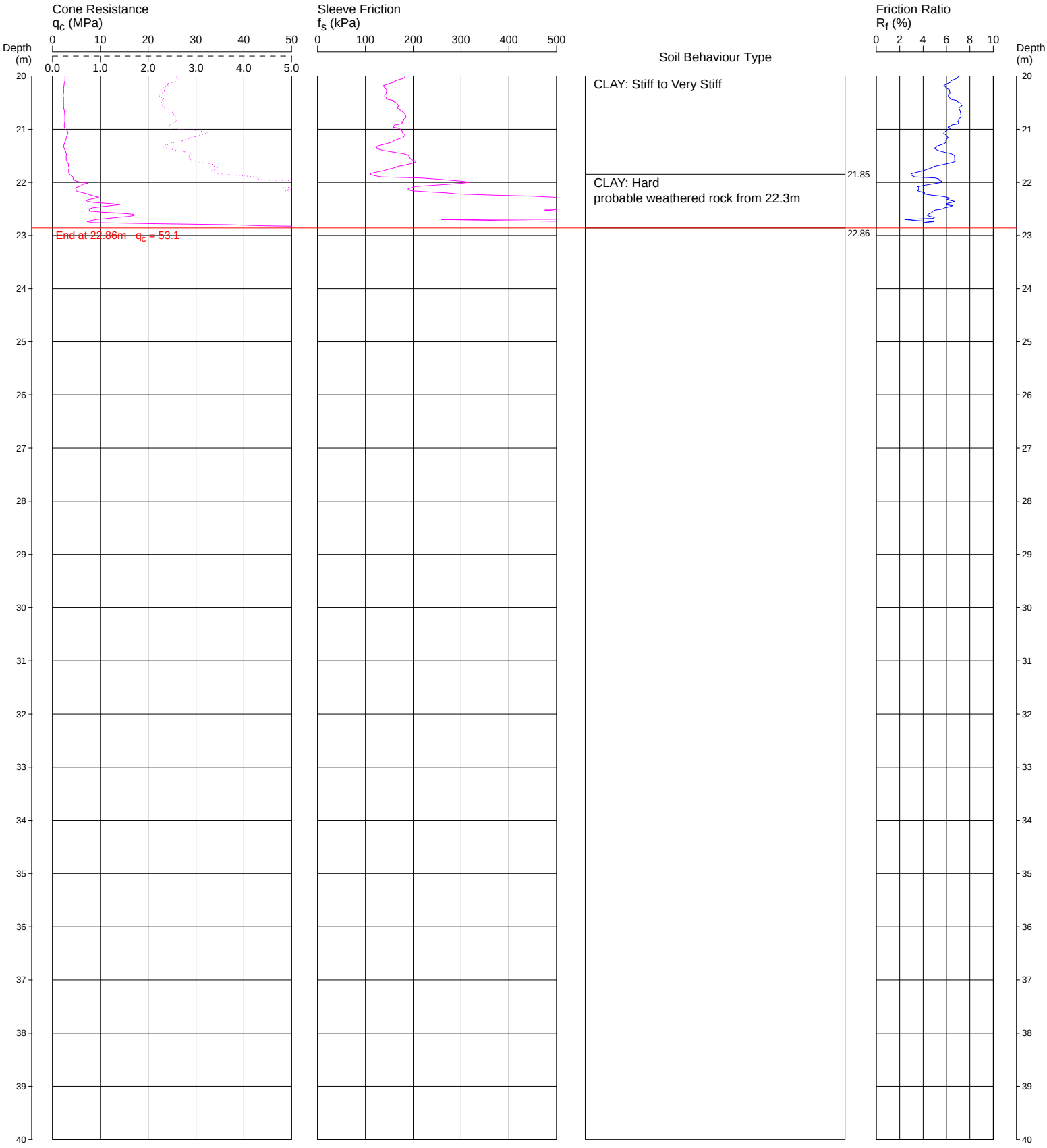
**COORDINATES:** 384674E 6356257N MGA Zone 56

**207**

**Page 2 of 2**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO CONE TIP REFUSAL
HOLE COLLAPSED AT 2.45 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.60m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\207.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.8 AHD

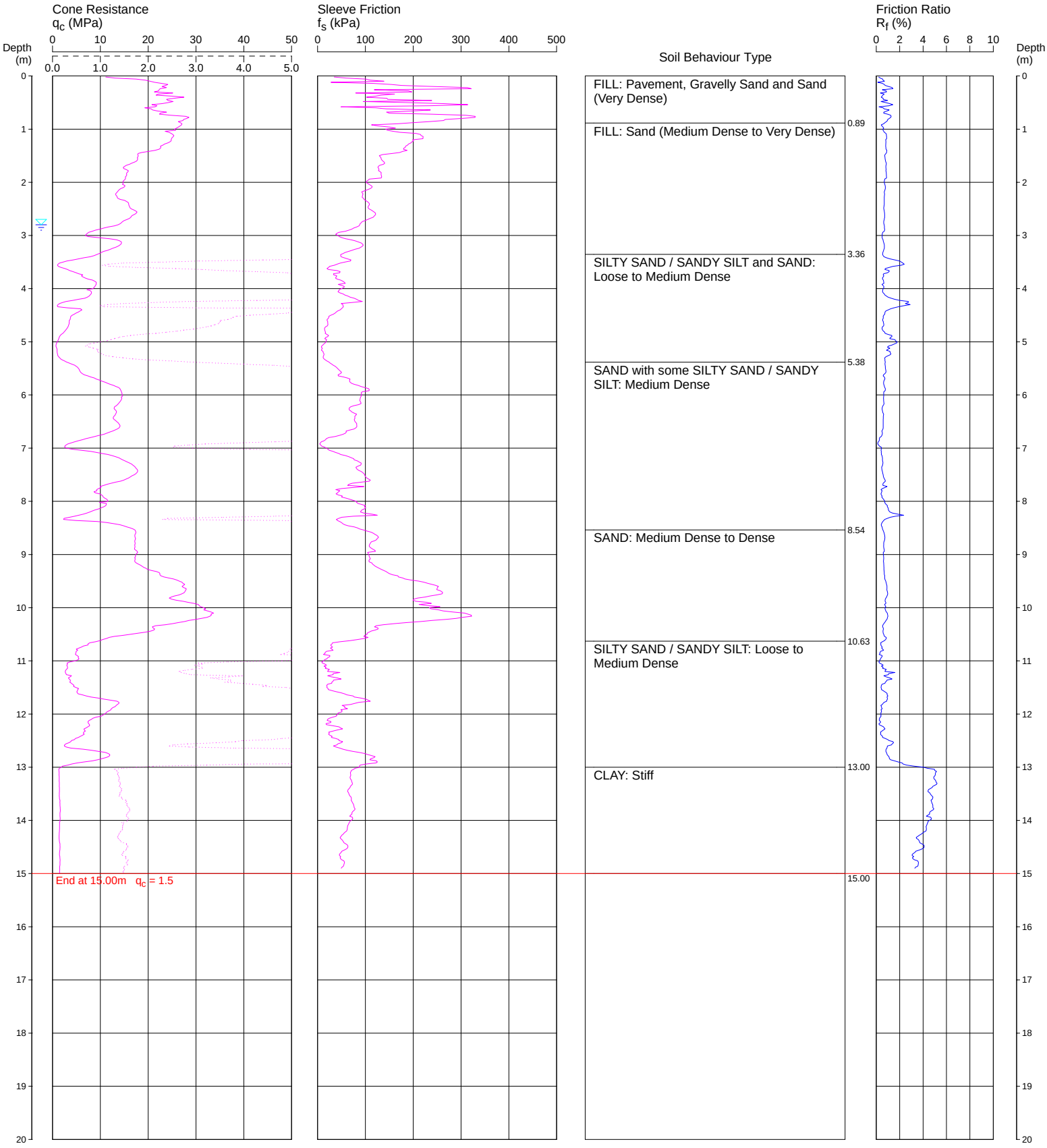
**COORDINATES:** 384707E 6356255N MGA Zone 56

**208**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO TARGET DEPTH REACHED
HOLE COLLAPSED AT 0.6 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.80m depth (assumed)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\208.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

ConePlot Version 5.9.2

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# CONE PENETRATION TEST

**CLIENT:** DOMA HOLDING (NSW) PTY LTD

**PROJECT:** NEWCASTLE, PROPOSED RESIDENTIAL TOWER DEVELOPMENT

**LOCATION:** 21 HONEYSUCKLE DRIVE, NEWCASTLE

**REDUCED LEVEL:** 2.3 AHD

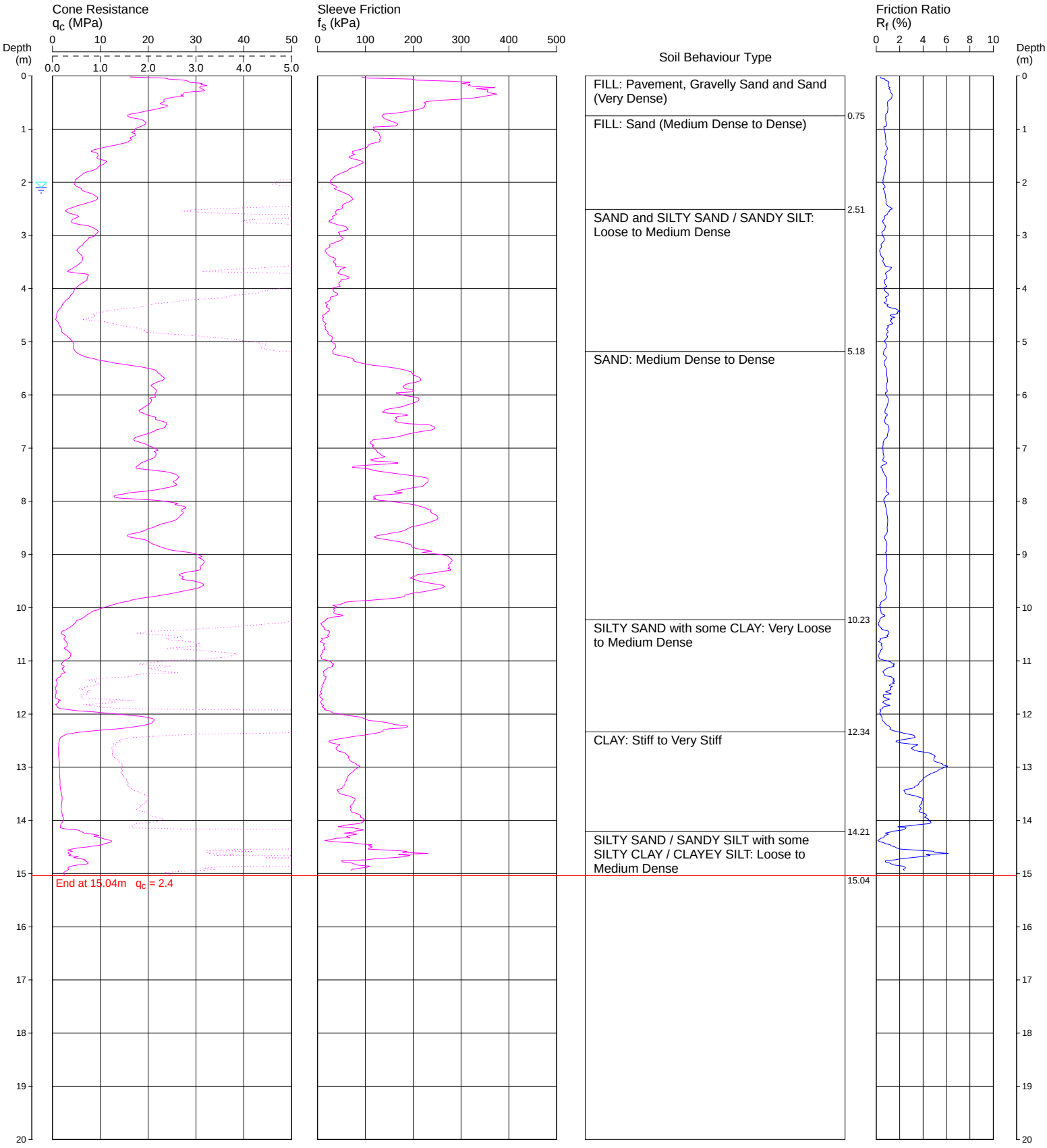
**COORDINATES:** 384745E 6356256N MGA Zone 56

**209**

**Page 1 of 1**

**DATE** 19/12/2016

**PROJECT No:** 91034




**REMARKS:** TEST DISCONTINUED DUE TO TARGET DEPTH REACHED
GROUNDWATER OBSERVED AT 2.1 m DEPTH AFTER WITHDRAWAL OF RODS

**Water depth after test: 2.10m depth (measured)**

**File:** P:\91034.00 - NEWCASTLE, 21 Honeysuckle Drive\4.0 Field Work\4.2 Testing\209.CP5

**Cone ID:** 120630 **Type:** I-CFXY-10

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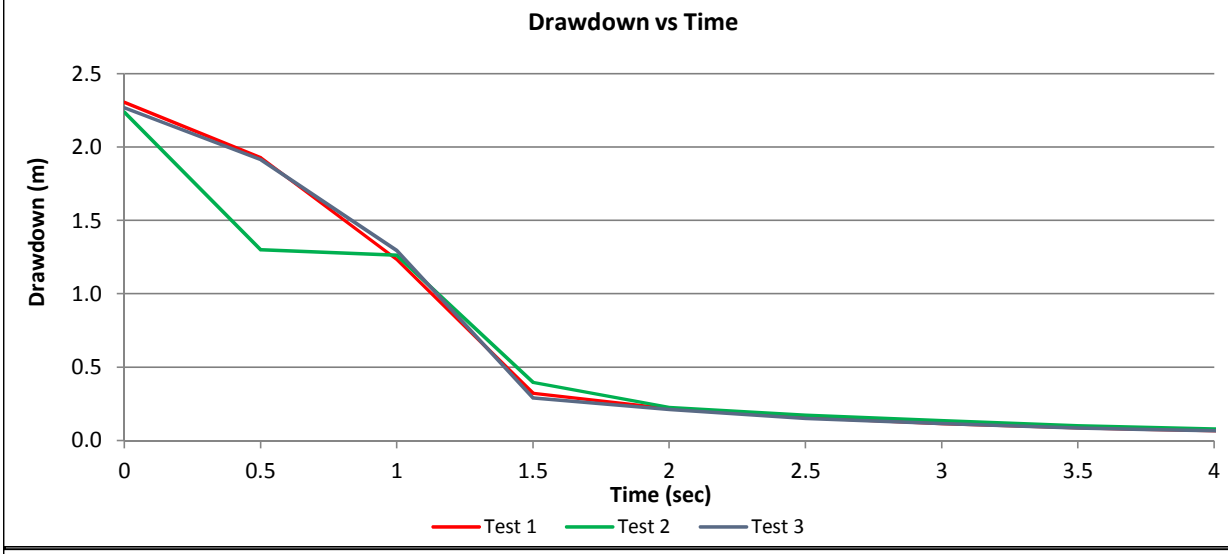
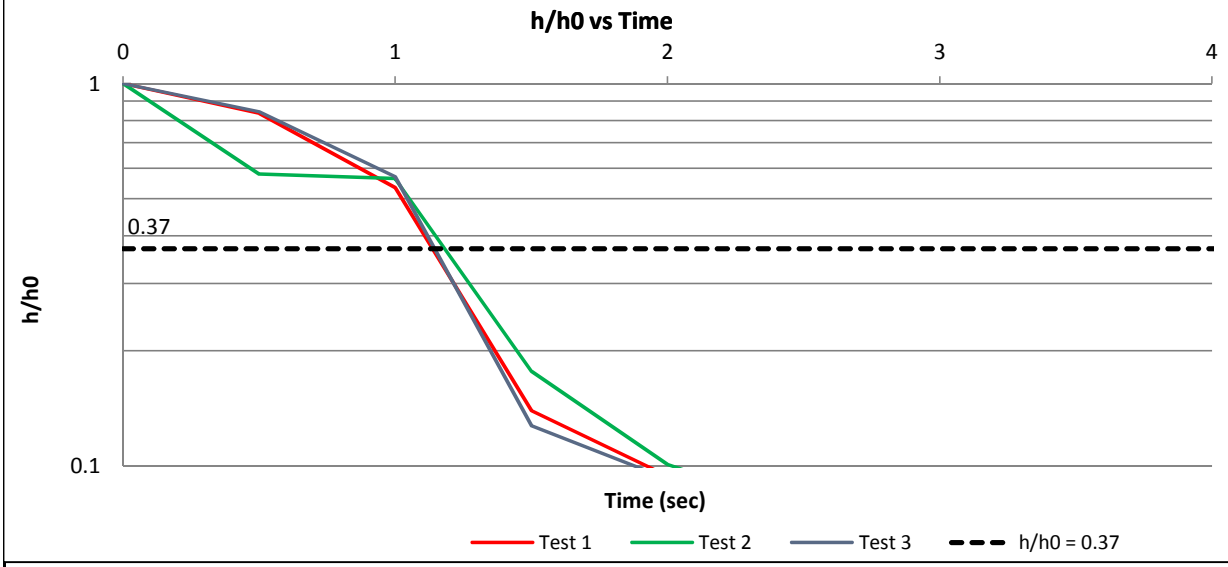
# Rising Head Test Analysis Report

**Project:** Proposed Residential Tower Development
**Project No:** 91034.00
**Client:** Doma Holdings (NSW) Pty Ltd

**Test Well No:** Bore 103 **Date Tested:** 6/01/2017




| | | | |
|---|---|---|---|
| **Test parameters:** | Casing radius: | 0.025 | m |
| | Gravel radius: | 0.05 | m |
| | Screen length: | 4.5 | m |
| | Sreen interval: | 0.5 m - 5.0 | m |
| | Screened test stratum: | Filling (Sand; Clay) / Sand / Sandy Clay / Sand | |
| **Analysis Method:** | Hvorslev | | |

**Analysis Results:**

| | Conductivity K | | Range of Conductivity K | | |
|---|---|---|---|---|---|
| | | | | m/s | m/d |
| Test 1: | 2.6E-04 m/s | 22 m/d | Minimum | 2.5E-04 | 22 |
| Test 2: | 2.5E-04 m/s | 22 m/d | Maximum | 2.6E-04 | 22 |
| Test 3: | 2.5E-04 m/s | 22 m/d | Mean | 2.5E-04 | 22 |

**Comments:**

Calculated by: DEW
Date: 10/01/2017

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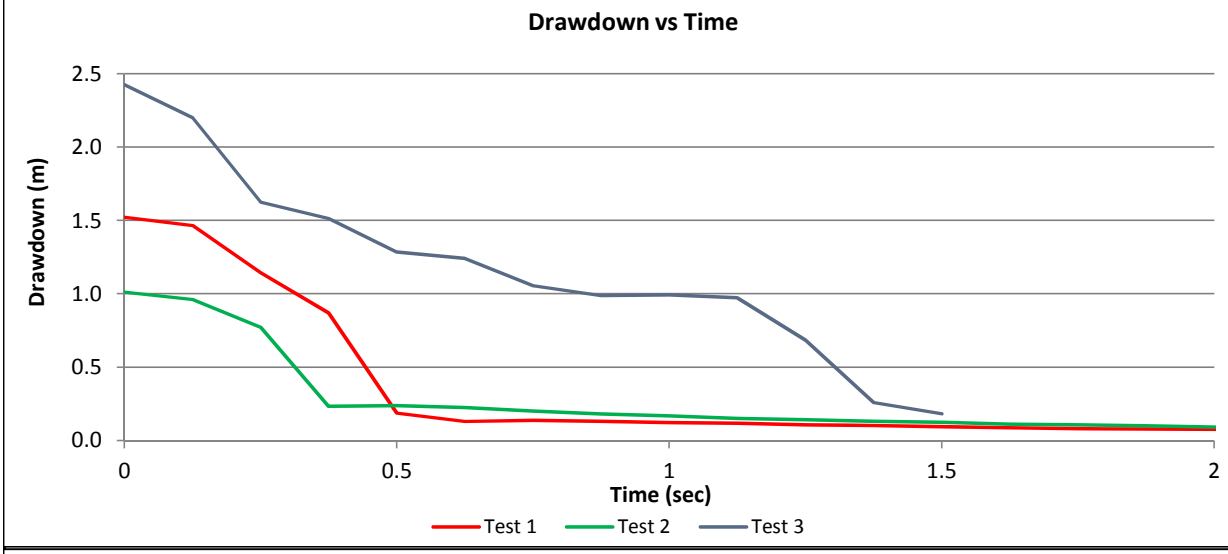
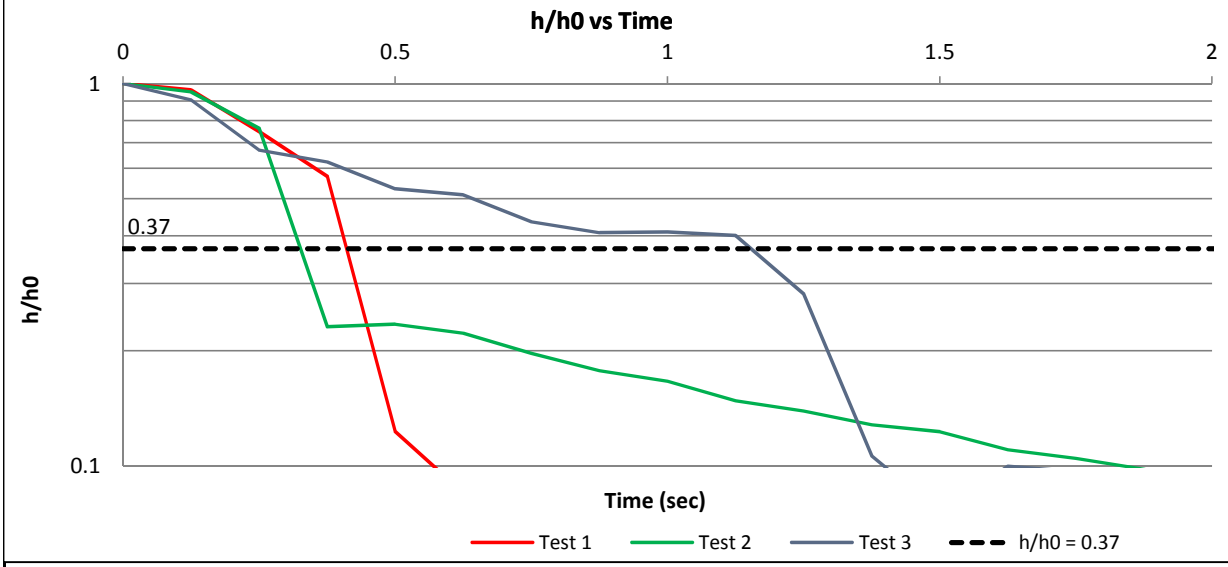
# Rising Head Test Analysis Report

**Project:** Proposed Residential Tower Development
**Project No:** 91034.00
**Client:** Doma Holdings (NSW) Pty Ltd

**Test Well No:** Bore 116 **Date Tested:** 6/01/2017




| | | | |
|---|---|---|---|
| **Test parameters:** | Casing radius: | 0.025 | m |
| | Gravel radius: | 0.05 | m |
| | Screen length: | 4.6 | m |
| | Sreen interval: | 0.4 m - 5.0 | m |
| | Screened test stratum: | Sand / Clayey Sand / Clayey Silt | |

**Analysis Method:** Hvorslev

**Analysis Results:**

| Conductivity K | | | Range of Conductivity K | | |
|---|---|---|---|---|---|
| | | | | m/s | m/d |
| Test 1: | 7.2E-04 m/s | 63 m/d | Minimum | 2.7E-04 | 23 |
| Test 2: | 9.1E-04 m/s | 79 m/d | Maximum | 9.1E-04 | 79 |
| Test 3: | 2.7E-04 m/s | 23 m/d | Mean | 6.4E-04 | 55 |

**Comments:**

Calculated by: DEW
Date: 10/01/2017

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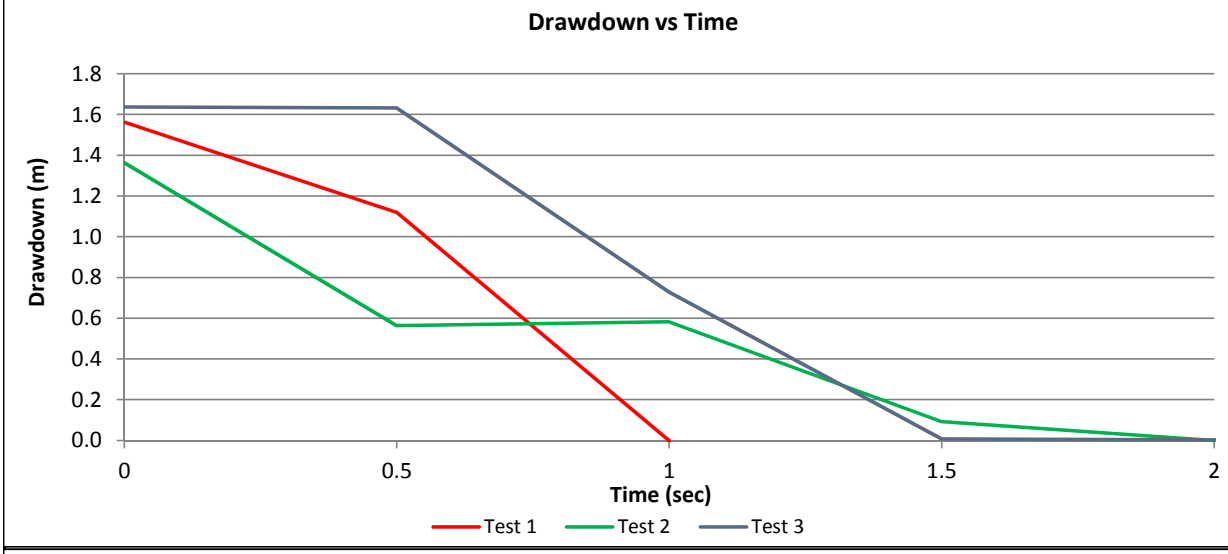
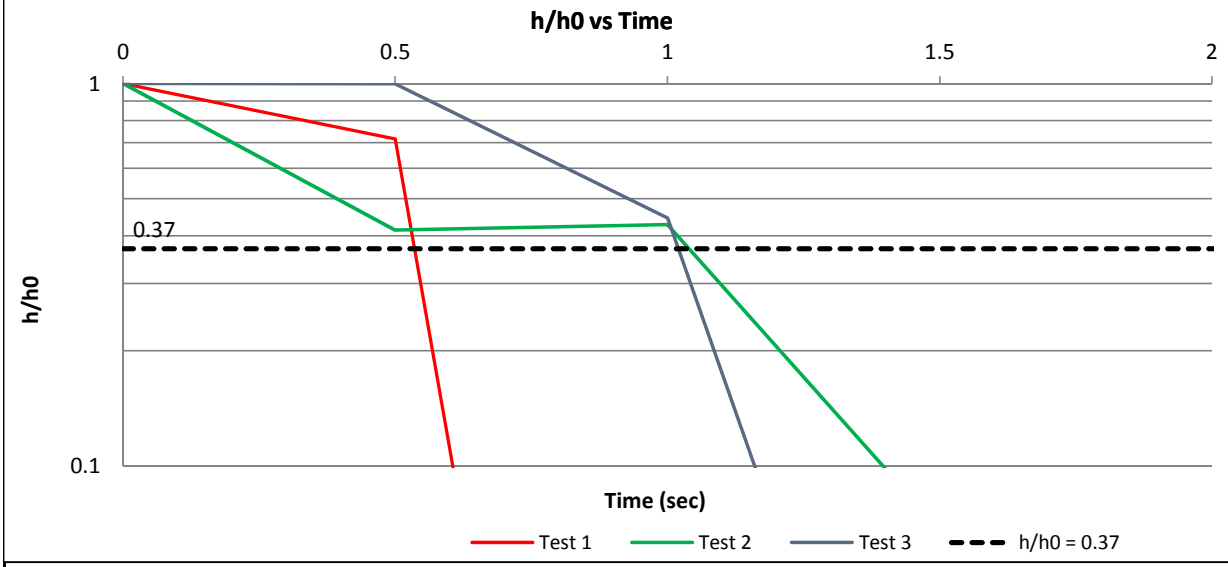
# Rising Head Test Analysis Report

**Project:** Proposed Residential Tower Development
**Project No:** 91034.00
**Client:** Doma Holdings (NSW) Pty Ltd

**Test Well No:** Bore 130 **Date Tested:** 6/01/2017



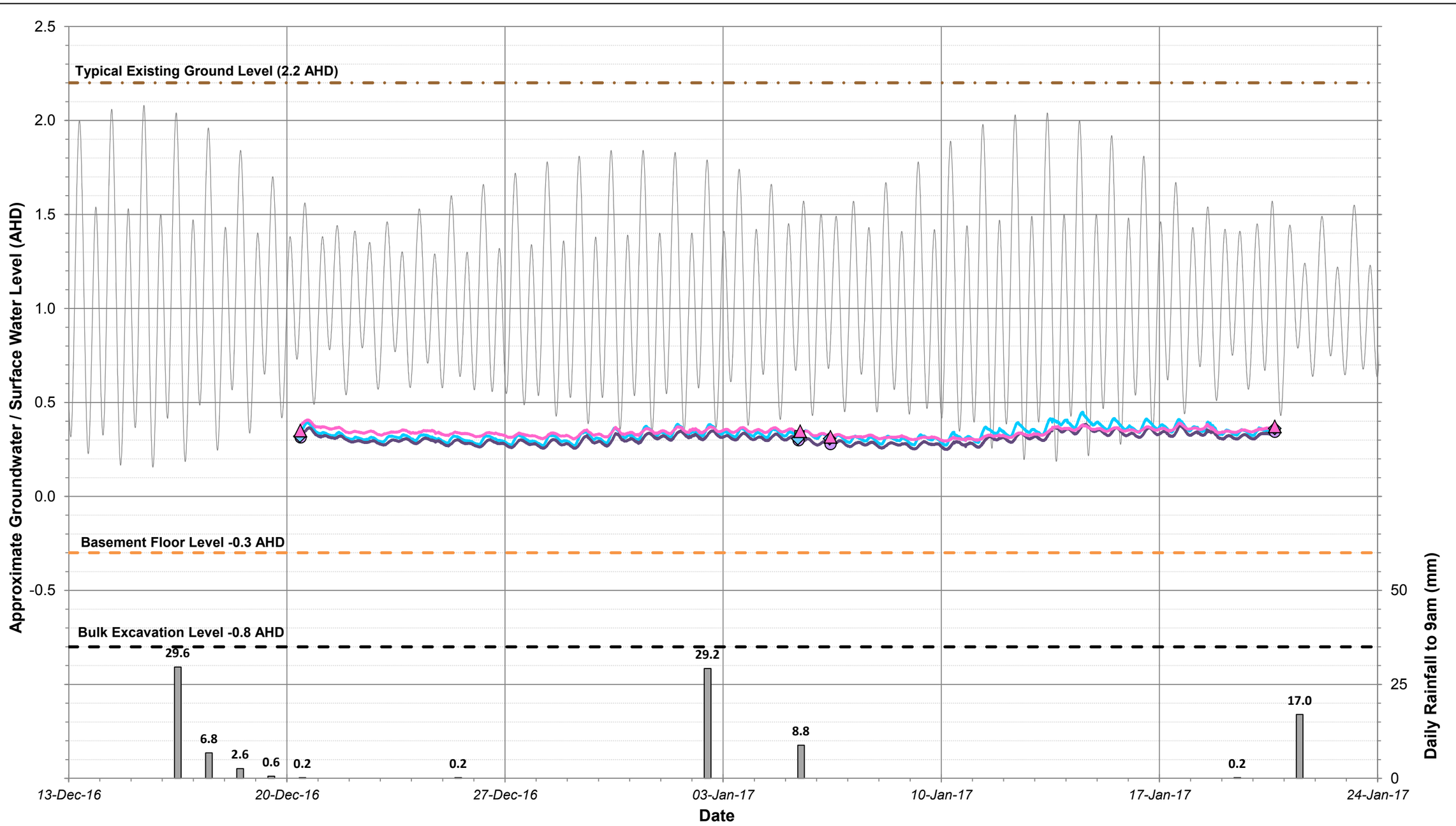

| | | | |
|---|---|---|---|
| **Test parameters:** | Casing radius: | 0.025 | m |
| | Gravel radius: | 0.05 | m |
| | Screen length: | 4.6 | m |
| | Sreen interval: | 0.4 m - 5.0 | m |
| | Screened test stratum: | Filling (Sand - possible natural) / Sand | |
| **Analysis Method:** | Hvorslev | | |

**Analysis Results:**

| Conductivity K | | | Range of Conductivity K | | |
|---|---|---|---|---|---|
| | | | | m/s | m/d |
| Test 1: | 4.2E-04 m/s | 36 m/d | Minimum | 2.9E-04 | 25 |
| Test 2: | 2.9E-04 m/s | 25 m/d | Maximum | 4.2E-04 | 36 |
| Test 3: | 2.9E-04 m/s | 25 m/d | Mean | 3.3E-04 | 29 |

**Comments:**

Calculated by: DEW
Date: 10/01/2017

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| | | | |
|---|---|---|---|
| CLIENT: Doma Holdings (NSW) Pty Ltd | | TITLE: **Groundwater Pressure Head vs Rainfall** | PROJECT NO: 91034.00 |
| OFFICE: Newcastle | DRAWN: DEW | **Proposed Residential Tower Development** | FIGURE NO: B1 |
| SCALE: N/A | DATE: 08.02.2017 | **21 Honeysuckle Drive, Newcastle** | REVISION: Rev1 |

# Appendix C

Laboratory Test Results
Quality Assurance / Quality Control Report
Chain of Custody Sheets (Field and Despatch)
Sample Receipts

# Quality Assurance / Quality Control Report
# Waste Classification and Groundwater Assessment
# 21 Honeysuckle Drive, Newcastle

## Q1. Data Quality Indicators

The data quality indicators (DQIs) and the procedures designed to enable achievement of the data quality objective (DQOs) are shown in Table C1.

**Table C1: Data Quality Indicators**

| DQI | Achievement Evaluation Procedure |
|---|---|
| Documentation completeness | Completion of field and laboratory C-O-C documentation. |
| Data completeness | Analysis of appropriate determinants based on site history. |
| Data comparability | Use of National Association of Testing Authorities, Australia (NATA) certified laboratory, use of consistent sampling technique. |
| Data Representativeness | Completion of logs describing conditions encountered, collection of samples representative of materials encountered at the site, appropriate sampling methodology, analysis of a range of materials encountered, appropriate collection, handling, storage and preservation. |
| Precision and accuracy for sampling and analysis | Achievement of 50% Relative Percentage Difference (RPD) for replicate analysis, acceptable levels for laboratory QC criteria. |

## Q2. Field Quality Assurance and Quality Control

Quality Assurance (QA) was maintained by:

- Compliance with a Project Quality Plan written for the objectives of the study;
- Using qualified engineers/scientists to undertake the field supervision and sampling;
- Following the Douglas Partners Pty Ltd (DP) operating procedures for sampling, field testing and decontamination as presented in Table C2; and
- Using NATA registered laboratories for sample testing that generally utilise standard laboratory methods of the US EPA, the APHA and NSW EPA.

**Table C2: Field Procedures**

| Abbreviation | Procedure Name |
|---|---|
| FPM LOG | Logging |
| FPM DECONT | Decontamination of Personnel and Equipment |
| FPM ENVID | Sample Identification, Handling, Transport and Storage of Contamination Samples |
| FPM PIDETC | Operation of Field Analysers |
| FPM WATSAMP | Water Sampling |
| FPM ENVSAMP | Sampling of Contaminated Soils |

Notes to Table C2:
From DP Field Procedures Manual

Quality Control (QC) of the laboratory programme was achieved by the following means:

- Check replicate - a specific sample was split in the field, placed in separate containers and labelled with different sample numbers, and sent to the laboratory for analysis;
- Method blanks - the laboratory ran reagent blanks to confirm the equipment and standards used were uncontaminated;
- Laboratory replicates - the laboratory split samples internally and conducted tests on separate extracts;
- Laboratory spikes - samples were spiked by the laboratory with a known concentration of contaminants and subsequently tested for percent recovery;

## Discussion

### A. Check Replicate

The Relative Percent Difference (RPD) between replicate results is used as a measure of laboratory reproducibility and is given by the following:

$$RPD = \frac{ABS\,(Replicate\ \ result\,1 - Replicate\ \ result\,2)}{(Replicate\ \ result\,1 + Replicate\ \ result\,2)/2}\,x\,100$$

The RPD can have a value between 0% and 200%. An RPD data quality objective of up to 50% is generally considered to be acceptable for organic analysis, and 35% for inorganics (i.e. Metals).

A summary of the results of the replicate QA/QC testing is provided in Table C3 and C4.

RPDs for replicates generally ranged from 0% to 40% and were within the quality control objectives. Elevated RPDs ranging from 67% to 164% were found for selected analytes, and may be attributed to the relatively low concentrations and/or the heterogeneity of the fill materials, which results in high RPDs.

## Table C3: Results of Quality Control Analysis – Soil

| | | | 104 | D16 | RPD | 108 | D17 | RPD | 114 | D13 | RPD | 122 | D7 | RPD | 123 | D14 | RPD | 125 | D6 | RPD | 129 | D15 | RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.55 | 0.55 | (%) | 1 | 1 | (%) | 0.55 | 0.55 | (%) | 0.6 | 0.6 | (%) | 1.9 | 1.9 | (%) | 0.5 | 0.5 | (%) | 0.6 | 0.6 | (%) |
| Analytes | Units | PQL | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | |
| Chloride | mg/kg | 10 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Electrical conductivity *(lab) | µS/cm | 1 | 71 | - | N/A | 55 | - | N/A | 58 | 43 | 30 | 44 | 51 | 15 | 50 | - | N/A | 55 | 56 | 2 | 46 | - | N/A |
| Moisture | % | 0.1 | 2 | 2.7 | 30 | 2.4 | 1.9 | 23 | 1.7 | 3.2 | 61 | 1.6 | 2.4 | 40 | 2.7 | 4.8 | 56 | 1.3 | 1.7 | 27 | 2.3 | 2.6 | 12 |
| Sulphate | mg/kg | 10 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| pH 1:5 soil:water | pH Units | | 9.3 | - | N/A | 9.2 | - | N/A | 9.3 | 9.5 | 2 | 9.1 | 9.1 | 0 | 9.2 | - | N/A | 9.3 | 9.3 | 0 | 9.1 | - | N/A |
| Metals | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 5 | <4 | N/A | <4 | <4 | N/A | 4 | 5 | 22 | 5 | 5 | 0 | <4 | <4 | N/A | 4 | 4 | 0 | <4 | <4 | N/A |
| Beryllium | mg/kg | 1 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Boron | mg/kg | 3 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Cadmium | mg/kg | 0.4 | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A |
| Chromium (III+VI) | mg/kg | 1 | 3 | 2 | 40 | 2 | 1 | 67 | 1 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 67 | 1 | 1 | 0 |
| Copper | mg/kg | 1 | 8 | 4 | 67 | 1 | <1 | N/A | <1 | <1 | N/A | 4 | 6 | 40 | 18 | 10 | 57 | 1 | 1 | 0 | 2 | 1 | 67 |
| Iron | mg/kg | 1 | 3800 | 1500 | 87 | 1500 | 1300 | 14 | 1600 | 1400 | 13 | 1500 | 1800 | 18 | 2100 | 2000 | 5 | 1300 | 1500 | 14 | 1200 | 1200 | 0 |
| Lead | mg/kg | 1 | 15 | 4 | 116 | 2 | 1 | 67 | <1 | <1 | N/A | 8 | 12 | 40 | 8 | 7 | 13 | 1 | 1 | 0 | 3 | 2 | 40 |
| Manganese | mg/kg | 1 | 93 | 18 | 135 | 15 | 12 | 22 | 12 | 13 | 8 | 39 | 50 | 25 | 37 | 40 | 8 | 13 | 18 | 32 | 11 | 11 | 0 |
| Mercury | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Molybdenum | mg/kg | 1 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Nickel | mg/kg | 1 | 3 | 1 | 100 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | 1 | N/A | 2 | 2 | 0 | <1 | 1 | N/A | <1 | <1 | N/A |
| Selenium | mg/kg | 2 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Zinc | mg/kg | 1 | 32 | 9 | 112 | 4 | 3 | 29 | 2 | 2 | 0 | 75 | 110 | 38 | 26 | 20 | 26 | 3 | 4 | 29 | 12 | 8 | 40 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C16-C34 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| C34-C40 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| F2-NAPHTHALENE | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C6 - C9 | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| C10 - C14 | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C15 - C28 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| C29-C36 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| +C10 - C36 (Sum of total) | mg/kg | | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A |
| C10 - C40 (Sum of total) | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C6-C10 less BTEX (F1) | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| C6-C10 | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A |
| Ethylbenzene | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| Toluene | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Xylene (m & p) | mg/kg | 2 | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A |
| Xylene (o) | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| Xylene Total | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 0.4 | <0.05 | N/A | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A | 24 | 5.7 | 123 | 2 | 2.3 | 14 | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A |
| Acenaphthene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.3 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Acenaphthylene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Benz(a)anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.6 | 0.4 | 120 | 0.2 | 0.2 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Benzo(a) pyrene | mg/kg | 0.05 | 0.06 | <0.05 | N/A | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A | 1.9 | 0.5 | 117 | 0.1 | 0.2 | 67 | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | 2.8 | 0.8 | 111 | 0.3 | 0.3 | 0 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.3 | 0.4 | 106 | 0.1 | 0.1 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Chrysene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.5 | 0.5 | 100 | 0.2 | 0.2 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Fluoranthene | mg/kg | 0.1 | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 4.5 | 1.2 | 116 | 0.4 | 0.5 | 22 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Fluorene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.1 | 0.3 | 114 | 0.1 | 0.1 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Naphthalene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Phenanthrene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 3 | 0.3 | 164 | 0.1 | 0.2 | 67 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Pyrene | mg/kg | 0.1 | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 4.1 | 1.1 | 115 | 0.4 | 0.5 | 22 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |

**Table C3: Results of Quality Control Analysis – Soil (Continued)**

| | | | 104 | D16 | RPD | 108 | D17 | RPD | 114 | D13 | RPD | 122 | D7 | RPD | 123 | D14 | RPD | 125 | D6 | RPD | 129 | D15 | RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.55 | 0.55 | (%) | 1 | 1 | (%) | 0.55 | 0.55 | (%) | 0.6 | 0.6 | (%) | 1.9 | 1.9 | (%) | 0.5 | 0.5 | (%) | 0.6 | 0.6 | (%) |
| Analytes | Units | PQL | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1016 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1221 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1232 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1242 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1248 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1254 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1260 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | <0.3 | - | N/A | - | - | N/A | <0.3 | - | N/A | - | - | N/A | - | - | N/A | <0.3 | - | N/A | - | - | N/A |
| 4,4-DDE | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| a-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Aldrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Aldrin + Dieldrin | mg/kg | | <0.2 | - | N/A | - | - | N/A | <0.2 | - | N/A | - | - | N/A | - | - | N/A | <0.2 | - | N/A | - | - | N/A |
| b-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlordane (cis) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlordane (trans) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| d-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDD | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDT | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDT+DDE+DDD | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dieldrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan I | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan II | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan sulphate | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endrin aldehyde | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| g-BHC (Lindane) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Heptachlor | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Heptachlor epoxide | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Hexachlorobenzene | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Methoxychlor | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Bromophos-ethyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlorpyrifos | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlorpyrifos-methyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Diazinon | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dichlorvos | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dimethoate | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Ethion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Fenitrothion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Malathion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Ronnel | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | <0.6 | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A |
| Pesticides (total, NSW Waste 2014) | mg/kg | | <0.6 | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | <1.3 | - | N/A | - | - | N/A | <1.3 | - | N/A | - | - | N/A | - | - | N/A | <1.3 | - | N/A | - | - | N/A |
| Parathion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |

Notes to Table C3:

N/A – Not Applicable

RPD – Relative Percentage Difference

PQL - Practical Quantitation Limits

## Table C4: Results of Quality Control Analysis – Groundwater

| Analyte | Units | PQL | 103 5/01/2017 | BD1 5/01/2017 | RPD (%) |
|---|---|---|---|---|---|
| **Field** | | | | | |
| Turbidity | NTU | 0.1 | 110 | 100 | 10 |
| **Inorganics** | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 6000 | 6000 | 0 |
| Nitrogen (Total) | mg/L | 0.1 | 0.7 | 0.8 | 13 |
| pH (Lab) | pH_Units | | 5.9 | 5.8 | 2 |
| **Metals** | | | | | |
| Arsenic | mg/L | 0.001 | - | - | N/A |
| Arsenic (Filtered) | mg/L | 0.001 | 0.005 | 0.005 | 0 |
| Beryllium | mg/L | 0.0005 | - | - | N/A |
| Beryllium (Filtered) | mg/L | 0.0005 | <0.0005 | <0.0005 | N/A |
| Boron | mg/L | 0.02 | - | - | N/A |
| Boron (Filtered) | mg/L | 0.02 | 0.64 | 0.64 | 0 |
| Cadmium | mg/L | 0.0001 | - | - | N/A |
| Cadmium (Filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | N/A |
| Chromium (III+VI) | mg/L | 0.001 | - | - | N/A |
| Chromium (III+VI) (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Copper | mg/L | 0.001 | - | - | N/A |
| Copper (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Iron (Filtered) | mg/L | 0.01 | 0.72 | 0.73 | 1 |
| Lead | mg/L | 0.001 | - | - | N/A |
| Lead (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Manganese (Filtered) | mg/L | 0.005 | 0.23 | 0.23 | 0 |
| Mercury | mg/L | 0.00005 | - | - | N/A |
| Mercury (Filtered) | mg/L | 0.00005 | <0.00005 | <0.00005 | N/A |
| Molybdenum | mg/L | 0.001 | - | - | N/A |
| Molybdenum (Filtered) | mg/L | 0.001 | 0.008 | 0.009 | 12 |
| Nickel | mg/L | 0.001 | - | - | N/A |
| Nickel (Filtered) | mg/L | 0.001 | 0.075 | 0.083 | 10 |
| Phosphorus | mg/L | 0.05 | 0.1 | 0.2 | 67 |
| Selenium | mg/L | 0.001 | - | - | N/A |
| Selenium (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Zinc | mg/L | 0.001 | - | - | N/A |
| Zinc (Filtered) | mg/L | 0.001 | 0.013 | 0.012 | 8 |
| **TPH** | | | | | |
| C10-C16 | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C16-C34 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C34-C40 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| Oil and Grease | mg/L | 5 | <5 | <5 | N/A |
| F2-NAPHTHALENE | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C6 - C9 | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| C10 - C14 | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C15 - C28 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C29-C36 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C6-C10 less BTEX (F1) | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| C6-C10 | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| **BTEX** | | | | | |
| Benzene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Ethylbenzene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Toluene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Xylene (m & p) | mg/L | 0.002 | <0.002 | <0.002 | N/A |
| Xylene (o) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| **PAH/Phenols** | | | | | |
| Total Positive PAHs | mg/L | | NIL | NIL | N/A |
| Acenaphthene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Acenaphthylene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benz(a)anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benzo(a) pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benzo(b,j+k)fluoranthene | mg/L | 0.00002 | <0.0002 | <0.0002 | N/A |
| Benzo(g,h,i)perylene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Chrysene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Dibenz(a,h)anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Fluoranthene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Fluorene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Indeno(1,2,3-c,d)pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Naphthalene | mg/L | 0.00002 | <0.0002 | <0.0002 | N/A |
| Phenanthrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |

Notes to Table C4:

N/A – Not Applicable

RPD – Relative Percentage Difference

PQL - Practical Quantitation Limits

## C. Method Blanks

All method blanks returned results lower than the laboratory detection limit, therefore are acceptable.

## D. Laboratory Replicates

The average RPD for individual contaminants were exceeded for selected soil samples, generally within fill materials. Triplicate test results were issued by the laboratory and are therefore within the laboratory acceptance limits.

## E. Laboratory Spikes

Recoveries in the order of 70% to 130% are generally considered to be acceptable for inorganic material and 60% to 140% for organic material. The average percent recoveries for individual contaminants were within the quality control objectives. The results should however be qualified and may slightly under-estimate or over-estimate contaminant concentrations in certain samples (i.e. biased low or high respectively).

## G. Sample Holding Times

Samples were generally analysed within the laboratory recommended holding times. The testing was therefore conducted as per QA/QC procedures and considered acceptable.

## Conclusions

In summary, while some elevated results were found, they can generally be attributed to the relatively low concentration of contaminants.

It is also noted that the magnitude of RPDs for field replicates (i.e. blind replicates) are generally higher than those for laboratory replicates. Field replicates results generally show greater variability than laboratory replicates, because they measure both field and laboratory reproducibility.

The accuracy and precision of the water testing procedures, as inferred by the laboratory QA/QC data is considered to be of sufficient standard to allow the data reported to be used in interpret site contamination conditions.

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# CERTIFICATE OF ANALYSIS 159296

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034, Newcastle** | | |
| No. of samples: | 12 soils | | |
| Date samples received / completed instructions received | 16/12/2016 | / | 16/12/2016 |

**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: / Issue Date: | 19/12/16 | / | 19/12/16 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-3 | 159296-4 | 159296-5 |
| Your Reference | ---------- - | 132 | 132 | 133 | 133 | 133 |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 1.3 | 2.1 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 92 | 98 | 101 | 102 | 90 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-6 | 159296-7 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- - | 134 | 134 | 130 | 130 | 130 |
| Depth | ---------- | 0.4 | 1.4 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 100 | 102 | 88 | 97 | 63 |

| vTRH(C6-C10)/BTEXN in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- - | 131 | 131 |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 |
| vTPHC$_6$ - C$_{10}$ less BTEX (F1) | mg/kg | <25 | <25 |
| Benzene | mg/kg | <0.2 | <0.2 |
| Toluene | mg/kg | <0.5 | <0.5 |
| Ethylbenzene | mg/kg | <1 | <1 |
| m+p-xylene | mg/kg | <2 | <2 |
| o-Xylene | mg/kg | <1 | <1 |
| Total +ve Xylenes | mg/kg | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 90 | 103 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-3 | 159296-4 | 159296-5 |
| Your Reference | ---------- - | 132 | 132 | 133 | 133 | 133 |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 1.3 | 2.1 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 17/12/2016 | 17/12/2016 | 17/12/2016 | 17/12/2016 | 17/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 86 | 86 | 89 | 87 | 85 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-6 | 159296-7 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- - | 134 | 134 | 130 | 130 | 130 |
| Depth | ---------- | 0.4 | 1.4 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 17/12/2016 | 17/12/2016 | 17/12/2016 | 17/12/2016 | 17/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 200 | <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 | 200 | <100 | <100 | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | 200 | <50 | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 88 | 87 | 86 | 87 | 85 |

| svTRH (C10-C40) in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- | 131 | 131 |
| | - | | |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 17/12/2016 | 17/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | <100 | <100 |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | <50 | <50 |
| TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2) | mg/kg | <50 | <50 |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 87 | 86 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-1<br>132<br><br>0.4<br>15/12/2016<br>soil | 159296-2<br>132<br><br>1.5<br>15/12/2016<br>soil | 159296-3<br>133<br><br>0.4<br>15/12/2016<br>soil | 159296-4<br>133<br><br>1.3<br>15/12/2016<br>soil | 159296-5<br>133<br><br>2.1<br>15/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| 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 | 0.3 | 0.2 | 0.5 | <0.1 | <0.1 |
| Anthracene | mg/kg | 0.1 | 0.1 | 0.3 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 1 | 0.5 | 2.4 | 0.3 | <0.1 |
| Pyrene | mg/kg | 1 | 0.5 | 2.4 | 0.3 | <0.1 |
| Benzo(a)anthracene | mg/kg | 0.3 | 0.2 | 0.8 | 0.1 | <0.1 |
| Chrysene | mg/kg | 0.5 | 0.2 | 1.1 | 0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.8 | 0.3 | 2 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.5 | 0.1 | 1.0 | 0.08 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.3 | 0.1 | 0.8 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.4 | 0.1 | 1.0 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.6 | <0.5 | 1.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.6 | <0.5 | 1.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.6 | <0.5 | 1.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 5.3 | 2.4 | 13 | 0.91 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 82 | 88 | 92 | 94 | 78 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-6<br>134<br><br>0.4<br>15/12/2016<br>soil | 159296-7<br>134<br><br>1.4<br>15/12/2016<br>soil | 159296-8<br>130<br><br>0.3<br>15/12/2016<br>soil | 159296-9<br>130<br><br>1.2<br>15/12/2016<br>soil | 159296-10<br>130<br><br>2.9<br>15/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | 0.2 | <0.1 | 0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 1.0 | 0.1 | 0.5 | 0.1 | <0.1 |
| Anthracene | mg/kg | 0.4 | <0.1 | 0.2 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 2.7 | 0.5 | 1.4 | 0.4 | 0.3 |
| Pyrene | mg/kg | 2.6 | 0.5 | 1.4 | 0.4 | 0.3 |
| Benzo(a)anthracene | mg/kg | 0.7 | 0.1 | 0.4 | 0.1 | 0.1 |
| Chrysene | mg/kg | 0.9 | 0.2 | 0.6 | 0.2 | 0.2 |
| Benzo(b,j+k)fluoranthene | mg/kg | 1 | 0.3 | 0.8 | 0.2 | 0.2 |
| Benzo(a)pyrene | mg/kg | 0.84 | 0.2 | 0.53 | 0.09 | 0.1 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.6 | 0.1 | 0.4 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.8 | 0.2 | 0.5 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 1.3 | <0.5 | 0.7 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 1.3 | <0.5 | 0.7 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 1.3 | <0.5 | 0.7 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 12 | 2.4 | 7.0 | 1.4 | 1.3 |
| *Surrogate p*-Terphenyl-d14 | % | 94 | 89 | 89 | 94 | 87 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-11<br>131<br><br>0.4<br>15/12/2016<br>soil | 159296-12<br>131<br><br>1.5<br>15/12/2016<br>soil |
|---|---|---|---|
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | 0.3 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 1.5 | <0.1 |
| Anthracene | mg/kg | 0.5 | <0.1 |
| Fluoranthene | mg/kg | 3.9 | <0.1 |
| Pyrene | mg/kg | 3.8 | <0.1 |
| Benzo(a)anthracene | mg/kg | 1.1 | <0.1 |
| Chrysene | mg/kg | 1.3 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 2.0 | <0.2 |
| Benzo(a)pyrene | mg/kg | 1.2 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.9 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 0.2 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 1.2 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 1.8 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 1.8 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 1.8 | <0.5 |
| Total +ve PAH's | mg/kg | 18 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 94 | 87 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- | 132 | 132 | 130 | 130 | 130 |
| Depth | ---------- | 0.4 | 1.5 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 18/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 106 | 106 | 102 | 105 | 106 |

| Organochlorine Pesticides in soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- | 131 | 131 |
| | - | | |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 |
| Aldrin | mg/kg | <0.1 | <0.1 |
| Heptachlor Epoxide | mg/kg | <0.1 | <0.1 |
| gamma-Chlordane | mg/kg | <0.1 | <0.1 |
| alpha-chlordane | mg/kg | <0.1 | <0.1 |
| Endosulfan I | mg/kg | <0.1 | <0.1 |
| pp-DDE | mg/kg | <0.1 | <0.1 |
| Dieldrin | mg/kg | <0.1 | <0.1 |
| Endrin | mg/kg | <0.1 | <0.1 |
| pp-DDD | mg/kg | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 104 | 105 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-1<br>132<br><br>0.4<br>15/12/2016<br>soil | 159296-2<br>132<br><br>1.5<br>15/12/2016<br>soil | 159296-8<br>130<br><br>0.3<br>15/12/2016<br>soil | 159296-9<br>130<br><br>1.2<br>15/12/2016<br>soil | 159296-10<br>130<br><br>2.9<br>15/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 18/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 106 | 106 | 102 | 105 | 106 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br> | 159296-11<br>131<br><br>0.4<br>15/12/2016<br>soil | 159296-12<br>131<br><br>1.5<br>15/12/2016<br>soil |
|---|---|---|---|
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 104 | 105 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- | 132 | 132 | 130 | 130 | 130 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 1.5 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 18/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| 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* TCLMX | % | 106 | 106 | 102 | 105 | 106 |

| PCBs in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- | 131 | 131 |
| | - | | |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| Aroclor 1016 | mg/kg | <0.1 | <0.1 |
| Aroclor 1221 | mg/kg | <0.1 | <0.1 |
| Aroclor 1232 | mg/kg | <0.1 | <0.1 |
| Aroclor 1242 | mg/kg | <0.1 | <0.1 |
| Aroclor 1248 | mg/kg | <0.1 | <0.1 |
| Aroclor 1254 | mg/kg | <0.1 | <0.1 |
| Aroclor 1260 | mg/kg | <0.1 | <0.1 |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCLMX | % | 104 | 105 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-3 | 159296-4 | 159296-5 |
| Your Reference | ---------- | 132 | 132 | 133 | 133 | 133 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 1.3 | 2.1 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Arsenic | mg/kg | 9 | <4 | 7 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | 2 | <0.4 | <0.4 |
| Chromium | mg/kg | 14 | 1 | 11 | 2 | 1 |
| Copper | mg/kg | 67 | <1 | 76 | 1 | <1 |
| Lead | mg/kg | 51 | 1 | 69 | 1 | 2 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 11 | <1 | 20 | 2 | <1 |
| Zinc | mg/kg | 150 | 4 | 430 | 14 | 4 |
| Manganese | mg/kg | 320 | 12 | 440 | 12 | 8 |
| Iron | mg/kg | 15,000 | 1,300 | 14,000 | 1,400 | 970 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-6 | 159296-7 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- | 134 | 134 | 130 | 130 | 130 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 1.4 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Arsenic | mg/kg | 7 | 4 | 5 | <4 | 4 |
| Cadmium | mg/kg | 1 | 4.8 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 9 | 7 | 10 | 2 | 5 |
| Copper | mg/kg | 71 | 30 | 26 | 10 | 21 |
| Lead | mg/kg | 120 | 130 | 55 | 11 | 12 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 7 | 5 | 10 | 1 | 5 |
| Zinc | mg/kg | 300 | 400 | 110 | 23 | 26 |
| Manganese | mg/kg | 260 | 110 | 180 | 32 | 46 |
| Iron | mg/kg | 12,000 | 14,000 | 8,000 | 2,100 | 4,900 |

| Acid Extractable metals in soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 | 159296-13 | 159296-14 |
| Your Reference | ---------- - | 131 | 131 | 132 - [TRIPLICATE] | 131 - [TRIPLICATE] |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 0.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Arsenic | mg/kg | <4 | <4 | 8 | 4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 2 | 1 | 17 | 3 |
| Copper | mg/kg | 17 | <1 | 73 | 17 |
| Lead | mg/kg | 17 | <1 | 60 | 28 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 4 | <1 | 9 | 5 |
| Zinc | mg/kg | 65 | 2 | 150 | 60 |
| Manganese | mg/kg | 140 | 10 | 390 | 110 |
| Iron | mg/kg | 3,200 | 930 | 11,000 | 3,500 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-3 | 159296-4 | 159296-5 |
| Your Reference | ---------- - | 132 | 132 | 133 | 133 | 133 |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 1.3 | 2.1 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| pH 1:5 soil:water | pH Units | 8.9 | 9.3 | 8.2 | 9.1 | 9.3 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 150 | 70 | 200 | 94 | 62 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-6 | 159296-7 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- - | 134 | 134 | 130 | 130 | 130 |
| Depth | ---------- | 0.4 | 1.4 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| pH 1:5 soil:water | pH Units | 8.4 | 8.7 | 8.9 | 9.0 | 8.5 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 140 | 71 | 120 | 94 | 150 |

| Misc Inorg - Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- - | 131 | 131 |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date prepared | - | 19/12/2016 | 19/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| pH 1:5 soil:water | pH Units | 9.0 | 9.4 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 110 | 62 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-1 | 159296-2 | 159296-3 | 159296-4 | 159296-5 |
| Your Reference | ---------- | 132 | 132 | 133 | 133 | 133 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 1.5 | 0.4 | 1.3 | 2.1 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Moisture | % | 13 | 6.0 | 6.0 | 2.9 | 20 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159296-6 | 159296-7 | 159296-8 | 159296-9 | 159296-10 |
| Your Reference | ---------- | 134 | 134 | 130 | 130 | 130 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 1.4 | 0.3 | 1.2 | 2.9 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Moisture | % | 4.4 | 3.7 | 15 | 3.6 | 20 |

| Moisture | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-11 | 159296-12 |
| Your Reference | ---------- | 131 | 131 |
| | - | | |
| Depth | ---------- | 0.4 | 1.5 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date prepared | - | 16/12/2016 | 16/12/2016 |
| Date analysed | - | 19/12/2016 | 19/12/2016 |
| Moisture | % | 3.4 | 3.7 |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes. |
| Org-014 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>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.<br><br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'TEQ 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.<br>2. 'TEQ 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.<br>3. 'TEQ 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.<br>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-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>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-008 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>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. |

| Method ID | Methodology Summary |
|---|---|
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Date analysed | - | | | 19/12/2016 | 159296-1 | 19/12/2016 \|\| 19/12/2016 | LCS-4 | 19/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 25 | Org-016 | <25 | 159296-1 | <25 \|\| <25 | LCS-4 | 97% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 25 | Org-016 | <25 | 159296-1 | <25 \|\| <25 | LCS-4 | 97% |
| Benzene | mg/kg | 0.2 | Org-016 | <0.2 | 159296-1 | <0.2 \|\| <0.2 | LCS-4 | 97% |
| Toluene | mg/kg | 0.5 | Org-016 | <0.5 | 159296-1 | <0.5 \|\| <0.5 | LCS-4 | 96% |
| Ethylbenzene | mg/kg | 1 | Org-016 | <1 | 159296-1 | <1 \|\| <1 | LCS-4 | 95% |
| m+p-xylene | mg/kg | 2 | Org-016 | <2 | 159296-1 | <2 \|\| <2 | LCS-4 | 98% |
| o-Xylene | mg/kg | 1 | Org-016 | <1 | 159296-1 | <1 \|\| <1 | LCS-4 | 94% |
| naphthalene | mg/kg | 1 | Org-014 | <1 | 159296-1 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | | Org-016 | 95 | 159296-1 | 92 \|\| 106 \|\| RPD: 14 | LCS-4 | 88% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Date analysed | - | | | 17/12/2016 | 159296-1 | 17/12/2016 \|\| 17/12/2016 | LCS-4 | 17/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 50 | Org-003 | <50 | 159296-1 | <50 \|\| <50 | LCS-4 | 106% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 100 | Org-003 | <100 | 159296-1 | <100 \|\| <100 | LCS-4 | 102% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 100 | Org-003 | <100 | 159296-1 | <100 \|\| <100 | LCS-4 | 91% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 50 | Org-003 | <50 | 159296-1 | <50 \|\| <50 | LCS-4 | 106% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 100 | Org-003 | <100 | 159296-1 | <100 \|\| <100 | LCS-4 | 102% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 100 | Org-003 | <100 | 159296-1 | <100 \|\| <100 | LCS-4 | 91% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 95 | 159296-1 | 86 \|\| 86 \|\| RPD: 0 | LCS-4 | 97% |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Date analysed | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Naphthalene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-4 | 110% |
| Acenaphthylene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-4 | 112% |
| Phenanthrene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.3 \|\| 0.3 \|\| RPD: 0 | LCS-4 | 110% |
| Anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.1 \|\| 0.1 \|\| RPD: 0 | [NR] | [NR] |
| Fluoranthene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 1 \|\| 1.2 \|\| RPD: 18 | LCS-4 | 102% |
| Pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 1 \|\| 1.2 \|\| RPD: 18 | LCS-4 | 105% |
| Benzo(a)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.3 \|\| 0.4 \|\| RPD: 29 | [NR] | [NR] |
| Chrysene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.5 \|\| 0.5 \|\| RPD: 0 | [NR] | [NR] |
| Benzo(b,j+k) fluoranthene | mg/kg | 0.2 | Org-012 | <0.2 | 159296-1 | 0.8 \|\| 0.8 \|\| RPD: 0 | [NR] | [NR] |

| QUALITY CONTROL<br><br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 0.05 | Org-012 | <0.05 | 159296-1 | 0.5 \|\| 0.5 \|\| RPD: 0 | LCS-4 | 95% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.3 \|\| 0.3 \|\| RPD: 0 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | Org-012 | <0.1 | 159296-1 | 0.4 \|\| 0.5 \|\| RPD: 22 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 100 | 159296-1 | 82 \|\| 89 \|\| RPD: 8 | LCS-4 | 115% |

| QUALITY CONTROL<br><br>Organochlorine Pesticides in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-3 | 16/12/2016 |
| Date analysed | - | | | 18/12/2016 | 159296-1 | 18/12/2016 \|\| 18/12/2016 | LCS-3 | 18/12/2016 |
| HCB | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 82% |
| gamma-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 93% |
| delta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 91% |
| Heptachlor Epoxide | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 100% |
| gamma-Chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 98% |
| Dieldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 105% |
| Endrin | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 98% |
| pp-DDD | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 117% |
| Endosulfan II | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 102% |
| Methoxychlor | mg/kg | 0.1 | Org-005 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | | Org-005 | 118 | 159296-1 | 106 \|\| 100 \|\| RPD: 6 | LCS-3 | 130% |

| QUALITY CONTROL<br><br>Organophosphorus Pesticides | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-3 | 16/12/2016 |
| Date analysed | - | | | 18/12/2016 | 159296-1 | 18/12/2016 \|\| 18/12/2016 | LCS-3 | 18/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 113% |
| Chlorpyriphos-methyl | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 96% |
| Dimethoate | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 86% |
| Fenitrothion | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 130% |
| Malathion | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 82% |
| Parathion | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 101% |
| Ronnel | mg/kg | 0.1 | Org-008 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 113% |
| *Surrogate* TCMX | % | | Org-008 | 118 | 159296-1 | 106 \|\| 100 \|\| RPD: 6 | LCS-3 | 118% |

| QUALITY CONTROL<br><br>PCBs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 | LCS-3 | 16/12/2016 |
| Date analysed | - | | | 18/12/2016 | 159296-1 | 18/12/2016 \|\| 18/12/2016 | LCS-3 | 18/12/2016 |
| Aroclor 1016 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | LCS-3 | 120% |
| Aroclor 1260 | mg/kg | 0.1 | Org-006 | <0.1 | 159296-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | | Org-006 | 118 | 159296-1 | 106 \|\| 100 \|\| RPD: 6 | LCS-3 | 118% |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD |
|---|---|---|---|---|---|---|
| Date prepared | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | | | 16/12/2016 | 159296-1 | 16/12/2016 \|\| 16/12/2016 |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | 159296-1 | 9 \|\| 7 \|\| RPD: 25 |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | 159296-1 | <0.4 \|\| <0.4 |
| Chromium | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 14 \|\| 52 \|\| RPD: 115 |
| Copper | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 67 \|\| 69 \|\| RPD: 3 |
| Lead | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 51 \|\| 53 \|\| RPD: 4 |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | 159296-1 | <0.1 \|\| <0.1 |
| Nickel | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 11 \|\| 10 \|\| RPD: 10 |
| Zinc | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 150 \|\| 150 \|\| RPD: 0 |
| Manganese | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 320 \|\| 1200 \|\| RPD: 116 |
| Iron | mg/kg | 1 | Metals-020 | <1 | 159296-1 | 15000 \|\| 19000 \|\| RPD: 24 |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 19/12/2016 | 159296-1 | 19/12/2016 \|\| 19/12/2016 | LCS-1 | 19/12/2016 |
| Date analysed | - | | | 19/12/2016 | 159296-1 | 19/12/2016 \|\| 19/12/2016 | LCS-1 | 19/12/2016 |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 159296-1 | 8.9 \|\| 8.7 \|\| RPD: 2 | LCS-1 | 102% |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | 159296-1 | 150 \|\| 160 \|\| RPD: 6 | LCS-1 | 107% |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159296-11 | <25 \|\| <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159296-11 | <25 \|\| <25 |
| Benzene | mg/kg | 159296-11 | <0.2 \|\| <0.2 |
| Toluene | mg/kg | 159296-11 | <0.5 \|\| <0.5 |
| Ethylbenzene | mg/kg | 159296-11 | <1 \|\| <1 |
| m+p-xylene | mg/kg | 159296-11 | <2 \|\| <2 |
| o-Xylene | mg/kg | 159296-11 | <1 \|\| <1 |
| naphthalene | mg/kg | 159296-11 | <1 \|\| <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 159296-11 | 90 \|\| 103 \|\| RPD: 13 |

| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 17/12/2016 \|\| 17/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159296-11 | <50 \|\| <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159296-11 | <100 \|\| <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159296-11 | <100 \|\| <100 |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159296-11 | <50 \|\| <50 |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159296-11 | <100 \|\| <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159296-11 | <100 \|\| <100 |
| *Surrogate* o-Terphenyl | % | 159296-11 | 87 \|\| 85 \|\| RPD: 2 |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Naphthalene | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Acenaphthylene | mg/kg | 159296-11 | 0.3 \|\| 0.2 \|\| RPD: 40 |
| Acenaphthene | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Fluorene | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Phenanthrene | mg/kg | 159296-11 | 1.5 \|\| 0.8 \|\| RPD: 61 |
| Anthracene | mg/kg | 159296-11 | 0.5 \|\| 0.4 \|\| RPD: 22 |
| Fluoranthene | mg/kg | 159296-11 | 3.9 \|\| 2.6 \|\| RPD: 40 |
| Pyrene | mg/kg | 159296-11 | 3.8 \|\| 2.6 \|\| RPD: 37 |
| Benzo(a)anthracene | mg/kg | 159296-11 | 1.1 \|\| 0.8 \|\| RPD: 32 |
| Chrysene | mg/kg | 159296-11 | 1.3 \|\| 1 \|\| RPD: 26 |
| Benzo(b,j+k)fluoranthene | mg/kg | 159296-11 | 2.0 \|\| 2 \|\| RPD: 0 |
| Benzo(a)pyrene | mg/kg | 159296-11 | 1.2 \|\| 0.94 \|\| RPD: 24 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159296-11 | 0.9 \|\| 0.7 \|\| RPD: 25 |
| Dibenzo(a,h)anthracene | mg/kg | 159296-11 | 0.2 \|\| 0.1 \|\| RPD: 67 |
| Benzo(g,h,i)perylene | mg/kg | 159296-11 | 1.2 \|\| 1 \|\| RPD: 18 |
| *Surrogate p*-Terphenyl-d14 | % | 159296-11 | 94 \|\| 90 \|\| RPD: 4 |

| QUALITY CONTROL Organochlorine Pesticides in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| HCB | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| alpha-BHC | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| gamma-BHC | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| beta-BHC | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Heptachlor | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| delta-BHC | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aldrin | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Heptachlor Epoxide | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| gamma-Chlordane | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| alpha-chlordane | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Endosulfan I | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| pp-DDE | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Dieldrin | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Endrin | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| pp-DDD | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Endosulfan II | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| pp-DDT | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Endrin Aldehyde | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Endosulfan Sulphate | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Methoxychlor | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| *Surrogate* TCMX | % | 159296-11 | 104 \|\| 103 \|\| RPD: 1 |

| QUALITY CONTROL Organophosphorus Pesticides | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Bromophos-ethyl | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Chlorpyriphos | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Chlorpyriphos-methyl | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Diazinon | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Dichlorvos | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Dimethoate | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Ethion | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Fenitrothion | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Malathion | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Parathion | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Ronnel | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| *Surrogate* TCMX | % | 159296-11 | 104 \|\| 103 \|\| RPD: 1 |

| QUALITY CONTROL PCBs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 |
| Date analysed | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| Aroclor 1016 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1221 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1232 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1242 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1248 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1254 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| Aroclor 1260 | mg/kg | 159296-11 | <0.1 \|\| <0.1 |
| *Surrogate* TCLMX | % | 159296-11 | 104 \|\| 103 \|\| RPD: 1 |

| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Date analysed | - | 159296-11 | 16/12/2016 \|\| 16/12/2016 | LCS-4 | 16/12/2016 |
| Arsenic | mg/kg | 159296-11 | <4 \|\| <4 | LCS-4 | 116% |
| Cadmium | mg/kg | 159296-11 | <0.4 \|\| <0.4 | LCS-4 | 107% |
| Chromium | mg/kg | 159296-11 | 2 \|\| 3 \|\| RPD: 40 | LCS-4 | 111% |
| Copper | mg/kg | 159296-11 | 17 \|\| 15 \|\| RPD: 12 | LCS-4 | 105% |
| Lead | mg/kg | 159296-11 | 17 \|\| 28 \|\| RPD: 49 | LCS-4 | 105% |
| Mercury | mg/kg | 159296-11 | <0.1 \|\| <0.1 | LCS-4 | 101% |
| Nickel | mg/kg | 159296-11 | 4 \|\| 5 \|\| RPD: 22 | LCS-4 | 103% |
| Zinc | mg/kg | 159296-11 | 65 \|\| 60 \|\| RPD: 8 | LCS-4 | 107% |
| Manganese | mg/kg | 159296-11 | 140 \|\| 91 \|\| RPD: 42 | LCS-4 | 103% |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Iron | mg/kg | 159296-11 | 3200 \|\| 3700 \|\| RPD: 14 | LCS-4 | 112% |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| Date analysed | - | 159296-11 | 19/12/2016 \|\| 19/12/2016 |
| pH 1:5 soil:water | pH Units | 159296-11 | 9.0 \|\| 8.9 \|\| RPD: 1 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159296-11 | 110 \|\| 130 \|\| RPD: 17 |

**Report Comments:**

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159296-1 for Cr and Mn. Therefore a triplicate result has been issued as laboratory sample number 159296-13.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159296-11 for Pb. Therefore a triplicate result has been issued as laboratory sample number 159296-14.

s PAH in soil:
The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159296-A

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | |
|---|---|
| Your Reference: | **91034, Newcastle** |
| No. of samples: | Additional Testing on 3 Soils |
| Date samples received / completed instructions received | 16/12/2016 / 20/12/16 |

**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: / Issue Date: | 4/01/17 / 4/01/17 |
| Date of Preliminary Report: | Not Issued |

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

**Results Approved By:**

David Springer
General Manager

| Metals in TCLP USEPA1311 | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 | 159296-A-7 |
| Your Reference | ---------- | 133 | 134 | 134 |
| | - | | | |
| Depth | ---------- | 0.4 | 0.4 | 1.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH of soil for fluid# determ. | pH units | 8.8 | 9.1 | 8.7 |
| pH of soil TCLP (after HCl) | pH units | 1.5 | 1.5 | 1.5 |
| Extraction fluid used | - | 1 | 1 | 1 |
| pH of final Leachate | pH units | 5.5 | 5.7 | 5.6 |
| Lead in TCLP | mg/L | [NA] | 0.06 | 0.2 |

| PAHs in TCLP (USEPA 1311) | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 |
| Your Reference | ---------- | 133 | 134 |
| | - | | |
| Depth | ---------- | 0.4 | 0.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 22/12/2016 | 22/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| Naphthalene in TCLP | mg/L | <0.001 | <0.001 |
| Acenaphthylene in TCLP | mg/L | <0.001 | <0.001 |
| Acenaphthene in TCLP | mg/L | <0.001 | <0.001 |
| Fluorene in TCLP | mg/L | <0.001 | <0.001 |
| Phenanthrene in TCLP | mg/L | <0.001 | <0.001 |
| Anthracene in TCLP | mg/L | <0.001 | <0.001 |
| Fluoranthene in TCLP | mg/L | <0.001 | <0.001 |
| Pyrene in TCLP | mg/L | <0.001 | <0.001 |
| Benzo(a)anthracene in TCLP | mg/L | <0.001 | <0.001 |
| Chrysene in TCLP | mg/L | <0.001 | <0.001 |
| Benzo(bjk)fluoranthene in TCLP | mg/L | <0.002 | <0.002 |
| Benzo(a)pyrene in TCLP | mg/L | <0.001 | <0.001 |
| Indeno(1,2,3-c,d)pyrene - TCLP | mg/L | <0.001 | <0.001 |
| Dibenzo(a,h)anthracene in TCLP | mg/L | <0.001 | <0.001 |
| Benzo(g,h,i)perylene in TCLP | mg/L | <0.001 | <0.001 |
| Total +ve PAH's | mg/L | NIL (+)VE | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 81 | 85 |

| Metals-ASLP Neutral (ICP-MS) | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 | 159296-A-7 |
| Your Reference | ---------- | 133 | 134 | 134 |
| | - | | | |
| Depth | ---------- | 0.4 | 0.4 | 1.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| pH of final Leachate | pH units | 8.8 | 9.3 | 9.3 |
| Arsenic in ASLP | µg/L | 7 | 7 | 8 |
| Cadmium in ASLP | µg/L | 0.3 | 0.4 | 0.3 |
| Chromium in ASLP | µg/L | 4 | 4 | 4 |
| Copper in ASLP | µg/L | 28 | 33 | 38 |
| Lead in ASLP | µg/L | 25 | 59 | 68 |
| Mercury in ASLP | µg/L | 0.05 | <0.05 | <0.05 |
| Nickel in ASLP | µg/L | 5 | 4 | 4 |
| Zinc in ASLP | µg/L | 160 | 220 | 230 |
| Manganese in ASLP | µg/L | 57 | 87 | 66 |
| Beryllium in ASLP | µg/L | <0.5 | <0.5 | <0.5 |
| Boron in ASLP | µg/L | 30 | 30 | <20 |
| Molybdenum in ASLP | µg/L | <1 | <1 | <1 |
| Selenium in ASLP | µg/L | <1 | <1 | <1 |

| sTRH in water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-A-3<br>133<br><br>0.4<br>15/12/2016<br>soil | 159296-A-6<br>134<br><br>0.4<br>15/12/2016<br>soil | 159296-A-7<br>134<br><br>1.4<br>15/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 | <50 | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 115 | 110 | 111 |

| PAHs - ASLP Trace Level<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159296-A-3<br>133<br><br>0.4<br>15/12/2016<br>soil | 159296-A-6<br>134<br><br>0.4<br>15/12/2016<br>soil | 159296-A-7<br>134<br><br>1.4<br>15/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Naphthalene | µg/L | <0.02 | 0.04 | <0.02 |
| Acenaphthylene | µg/L | <0.01 | 0.02 | <0.01 |
| Acenaphthene | µg/L | <0.01 | 0.08 | <0.01 |
| Fluorene | µg/L | <0.01 | 0.06 | <0.01 |
| Phenanthrene | µg/L | 0.05 | 0.38 | 0.07 |
| Anthracene | µg/L | 0.01 | 0.09 | 0.02 |
| Fluoranthene | µg/L | 0.06 | 0.17 | 0.03 |
| Pyrene | µg/L | 0.07 | 0.15 | 0.02 |
| Benzo(a)anthracene | µg/L | 0.02 | 0.03 | <0.01 |
| Chrysene | µg/L | 0.03 | 0.02 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | 0.06 | 0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | 0.03 | 0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | 0.02 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | 0.03 | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.38 | 1.1 | 0.14 |
| *Surrogate p*-Terphenyl-d14 | % | 74 | 74 | 69 |

| Metals-ASLP Sea Water (ICP-MS) | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 | 159296-A-7 |
| Your Reference | ---------- | 133 | 134 | 134 |
| Depth | - ---------- | 0.4 | 0.4 | 1.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Date analysed | - | 29/12/2016 | 29/12/2016 | 29/12/2016 |
| pH of final Leachate | pH units | 7.6 | 7.7 | 7.7 |
| Arsenic in ASLP Sea Water | µg/L | 3 | 2 | 2 |
| Cadmium in ASLP Sea Water | µg/L | 5.7 | 5.3 | 2.1 |
| Chromium in ASLP Sea Water | µg/L | <1 | <1 | <1 |
| Copper in ASLP Sea Water | µg/L | 4 | 5 | 4 |
| Lead in ASLP Sea Water | µg/L | <1 | 1 | 1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 | <0.05 | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 2 | <1 | <1 |
| Zinc in ASLP Sea Water | µg/L | 85 | 110 | 110 |
| Manganese in ASLP Sea Water | µg/L | 7 | 6 | 10 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 | <0.5 | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,400 | 4,500 | 4,700 |
| Molybdenum in ASLP Sea Water | µg/L | 12 | 11 | 12 |
| Selenium in ASLP Sea Water | µg/L | <1 | <1 | <1 |

| sTRH in sea water leach | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 | 159296-A-7 |
| Your Reference | ---------- | 133 | 134 | 134 |
| Depth | ---------- | 0.4 | 0.4 | 1.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 | <50 | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 93 | 103 | 118 |

| PAHs - ASLP Sea Water Trace Level | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159296-A-3 | 159296-A-6 | 159296-A-7 |
| Your Reference | ---------- | 133 | 134 | 134 |
| Depth | ---------- | 0.4 | 0.4 | 1.4 |
| Date Sampled | | 15/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Naphthalene | µg/L | 0.03 | <0.02 | <0.02 |
| Acenaphthylene | µg/L | 0.04 | <0.01 | <0.01 |
| Acenaphthene | µg/L | <0.01 | <0.01 | <0.01 |
| Fluorene | µg/L | <0.01 | <0.01 | <0.01 |
| Phenanthrene | µg/L | 0.10 | 0.04 | 0.07 |
| Anthracene | µg/L | 0.05 | <0.01 | <0.01 |
| Fluoranthene | µg/L | 0.28 | 0.01 | 0.02 |
| Pyrene | µg/L | 0.31 | <0.01 | 0.02 |
| Benzo(a)anthracene | µg/L | 0.14 | <0.01 | <0.01 |
| Chrysene | µg/L | 0.14 | <0.01 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | 0.36 | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | 0.22 | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | 0.15 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.04 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | 0.20 | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 2.1 | 0.050 | 0.11 |
| *Surrogate p*-Terphenyl-d14 | % | 71 | 70 | 88 |

| Method ID | Methodology Summary |
|---|---|
| Inorg-004 | Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. |
| EXTRACT.7 | Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Metals-020 ICP-AES | Determination of various metals by ICP-AES. |
| Org-012 | Leachates are extracted with Dichloromethane and analysed by GC-MS. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997. |
| Metals-021 ASLP | Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003_NEUTRAL | Leachates are extracted with Dichloromethane and analysed by GC-FID. |

| QUALITY CONTROL<br><br>Metals in TCLP USEPA1311 | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | [NT] | [NT] | LCS-W2 | 21/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-W2 | 23/12/2016 |
| Lead in TCLP | mg/L | 0.03 | Metals-020 ICP-AES | <0.03 | [NT] | [NT] | LCS-W2 | 92% |
| QUALITY CONTROL<br><br>PAHs in TCLP (USEPA 1311) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | | | 22/12/2016 | [NT] | [NT] | LCS-W2 | 22/12/2016 |
| Date analysed | - | | | 22/12/2016 | [NT] | [NT] | LCS-W2 | 22/12/2016 |
| Naphthalene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 77% |
| Acenaphthylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluorene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 74% |
| Phenanthrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 74% |
| Anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 73% |
| Pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 74% |
| Benzo(a)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Chrysene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(bjk)fluoranthene in TCLP | mg/L | 0.002 | Org-012 | <0.002 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W2 | 85% |
| Indeno(1,2,3-c,d)pyrene -TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 117 | [NT] | [NT] | LCS-W2 | 78% |

| QUALITY CONTROL<br><br>Metals-ASLP Neutral (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | [NT] | [NT] | LCS-W1 | 21/12/2016 |
| Date analysed | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Arsenic in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 99% |
| Cadmium in ASLP | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W1 | 100% |
| Chromium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 96% |
| Copper in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 101% |
| Lead in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 100% |
| Mercury in ASLP | µg/L | 0.05 | Metals-021 ASLP | <0.05 | [NT] | [NT] | LCS-W1 | 103% |
| Nickel in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 99% |
| Zinc in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 99% |
| Manganese in ASLP | µg/L | 5 | Metals-022 ICP-MS | <5 | [NT] | [NT] | LCS-W1 | 99% |
| Beryllium in ASLP | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W1 | 91% |
| Boron in ASLP | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W1 | 98% |
| Molybdenum in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 91% |
| Selenium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 99% |

| QUALITY CONTROL<br>sTRH in water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | LCS-W2 | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-W2 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W2 | 93% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 90% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 92% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W2 | 93% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 90% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 92% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 98 | [NT] | [NT] | LCS-W2 | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | | 70% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 72% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 73% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 71% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 74 | [NT] | [NT] | | 88% |

| QUALITY CONTROL<br><br>Metals-ASLP Sea Water (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 22/12/2016 | [NT] | [NT] | LCS-W1 | 22/12/2016 |
| Date analysed | - | | | 29/12/2016 | [NT] | [NT] | LCS-W1 | 29/12/2016 |
| Arsenic in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 103% |
| Cadmium in ASLP Sea Water | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W1 | 108% |
| Chromium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 103% |
| Copper in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 110% |
| Lead in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 93% |
| Mercury in ASLP Sea Water | µg/L | 0.05 | Metals-021 ASLP | <0.05 | [NT] | [NT] | LCS-W1 | 106% |
| Nickel in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 100% |
| Zinc in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 103% |
| Manganese in ASLP Sea Water | µg/L | 5 | Metals-022 ICP-MS | <5 | [NT] | [NT] | LCS-W1 | 98% |
| Beryllium in ASLP Sea Water | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W1 | 83% |
| Boron in ASLP Sea Water | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W1 | 90% |
| Molybdenum in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 100% |
| Selenium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 110% |

| QUALITY CONTROL<br>sTRH in sea water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | | 93% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | | 90% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | | 92% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | | 93% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | | 90% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | | 92% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 98 | [NT] | [NT] | | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Sea Water Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | | 23/12/2016 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | | 70% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 72% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 73% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 71% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 74 | [NT] | [NT] | | 88% |

**Report Comments:**

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159461

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034.00, Newcastle** | | |
| No. of samples: | 2 Waters | | |
| Date samples received / completed instructions received | 20/12/16 | / | 20/12/16 |

**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: / Issue Date: | 4/01/16 | / | 30/12/16 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Water | | |
|---|---|---|
| Our Reference: | UNITS | 159461-1 |
| Your Reference | ---------- | HR1 |
| | - | |
| Type of sample | ---------- | Water |
| Date extracted | - | 21/12/2016 |
| Date analysed | - | 22/12/2016 |
| $TRHC_6$ - $C_9$ | µg/L | <10 |
| $TRHC_6$ - $C_{10}$ | µg/L | <10 |
| $TRHC_6$ - $C_{10}$ 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 | % | 128 |
| *Surrogate* toluene-d8 | % | 94 |
| *Surrogate* 4-BFB | % | 77 |

| svTRH (C10-C40) in Water | | |
|---|---|---|
| Our Reference: | UNITS | 159461-1 |
| Your Reference | ---------- | HR1 |
| Type of sample | - ---------- | Water |
| Date extracted | - | 23/12/2016 |
| Date analysed | - | 23/12/2016 |
| $TRHC_{10}$ - $C_{14}$ | µg/L | <50 |
| $TRHC_{15}$ - $C_{28}$ | µg/L | <100 |
| $TRHC_{29}$ - $C_{36}$ | 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 | % | 80 |

| PAHs in Water - Trace Level<br>Our Reference:<br>Your Reference<br><br>Type of sample | UNITS<br>----------<br>-<br>---------- | <br>159461-1<br>HR1<br><br>Water |
|---|---|---|
| Date extracted | - | 23/12/2016 |
| Date analysed | - | 23/12/2016 |
| Naphthalene | µg/L | <0.02 |
| Acenaphthylene | µg/L | <0.01 |
| Acenaphthene | µg/L | <0.01 |
| Fluorene | µg/L | <0.01 |
| Phenanthrene | µg/L | <0.01 |
| Anthracene | µg/L | <0.01 |
| Fluoranthene | µg/L | <0.01 |
| Pyrene | µg/L | <0.01 |
| Benzo(a)anthracene | µg/L | <0.01 |
| Chrysene | µg/L | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 |
| Total +ve PAH's | µg/L | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 74 |

| HM in water - total | | |
|---|---|---|
| Our Reference: | UNITS | 159461-1 |
| Your Reference | ---------- | HR1 |
| | - | |
| Type of sample | ---------- | Water |
| Date prepared | - | 21/12/2016 |
| Date analysed | - | 21/12/2016 |
| Arsenic-Total | µg/L | 2 |
| Cadmium-Total | µg/L | <0.1 |
| Chromium-Total | µg/L | <1 |
| Copper-Total | µg/L | 4 |
| Lead-Total | µg/L | <1 |
| Mercury-Total | µg/L | <0.05 |
| Nickel-Total | µg/L | <1 |
| Zinc-Total | µg/L | 15 |
| Beryllium-Total | µg/L | <0.5 |
| Boron-Total | µg/L | 4,800 |
| Molybdenum-Total | µg/L | 12 |
| Selenium-Total | µg/L | <1 |

| Miscellaneous Inorganics | | |
|---|---|---|
| Our Reference: | UNITS | 159461-1 |
| Your Reference | ---------- | HR1 |
| | - | |
| Type of sample | ---------- | Water |
| Date prepared | - | 20/12/2016 |
| Date analysed | - | 20/12/2016 |
| pH | pH Units | 7.7 |
| Electrical Conductivity | µS/cm | 42,000 |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-013 | Water samples are analysed directly by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |

| QUALITY CONTROL<br><br>vTRH(C6-C10)/BTEXN in Water | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | [NT] | [NT] | LCS-W1 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | [NT] | [NT] | LCS-W1 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | µg/L | 10 | Org-016 | <10 | [NT] | [NT] | LCS-W1 | 99% |
| TRHC$_6$ - C$_{10}$ | µg/L | 10 | Org-016 | <10 | [NT] | [NT] | LCS-W1 | 99% |
| Benzene | µg/L | 1 | Org-016 | <1 | [NT] | [NT] | LCS-W1 | 102% |
| Toluene | µg/L | 1 | Org-016 | <1 | [NT] | [NT] | LCS-W1 | 94% |
| Ethylbenzene | µg/L | 1 | Org-016 | <1 | [NT] | [NT] | LCS-W1 | 89% |
| m+p-xylene | µg/L | 2 | Org-016 | <2 | [NT] | [NT] | LCS-W1 | 106% |
| o-xylene | µg/L | 1 | Org-016 | <1 | [NT] | [NT] | LCS-W1 | 107% |
| Naphthalene | µg/L | 1 | Org-013 | <1 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate* Dibromofluoromethane | % | | Org-016 | 117 | [NT] | [NT] | LCS-W1 | 106% |
| *Surrogate* toluene-d8 | % | | Org-016 | 93 | [NT] | [NT] | LCS-W1 | 98% |
| *Surrogate* 4-BFB | % | | Org-016 | 82 | [NT] | [NT] | LCS-W1 | 105% |
| QUALITY CONTROL<br><br>svTRH (C10-C40) in Water | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | LCS-W2 | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-W2 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W2 | 93% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 90% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 92% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W2 | 93% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 90% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W2 | 92% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 98 | [NT] | [NT] | LCS-W2 | 74% |
| QUALITY CONTROL<br><br>PAHs in Water - Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | LCS-W1 | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-W1 | 23/12/2016 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W1 | 67% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 75% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 73% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 64% |

| QUALITY CONTROL<br><br>PAHs in Water - Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 65% |
| Benzo(b,j +k)fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 63% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 74 | [NT] | [NT] | LCS-W1 | 88% |

| QUALITY CONTROL<br><br>HM in water - total | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 21/12/2016 | [NT] | [NT] | LCS-W1 | 21/12/2016 |
| Date analysed | - | | | 21/12/2016 | [NT] | [NT] | LCS-W1 | 21/12/2016 |
| Arsenic-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 101% |
| Cadmium-Total | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W1 | 104% |
| Chromium-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 97% |
| Copper-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 101% |
| Lead-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 102% |
| Mercury-Total | µg/L | 0.05 | Metals-021 | <0.05 | [NT] | [NT] | LCS-W1 | 105% |
| Nickel-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 101% |
| Zinc-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 102% |
| Beryllium-Total | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W1 | 95% |
| Boron-Total | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W1 | 101% |
| Molybdenum-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 100% |
| Selenium-Total | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 105% |

| QUALITY CONTROL<br>Miscellaneous Inorganics | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 20/12/2016 | [NT] | [NT] | LCS-W1 | 20/12/2016 |
| Date analysed | - | | | 20/12/2016 | [NT] | [NT] | LCS-W1 | 20/12/2016 |
| pH | pH Units | | Inorg-001 | [NT] | [NT] | [NT] | LCS-W1 | 100% |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | <1 | [NT] | [NT] | LCS-W1 | 102% |

| QUALITY CONTROL<br>HM in water - total | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | [NT] | [NT] | 159461-1 | 21/12/2016 |
| Date analysed | - | [NT] | [NT] | 159461-1 | 21/12/2016 |
| Arsenic-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Cadmium-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Chromium-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Copper-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Lead-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Mercury-Total | µg/L | [NT] | [NT] | 159461-1 | 103% |
| Nickel-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Zinc-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Beryllium-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Boron-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Molybdenum-Total | µg/L | [NT] | [NT] | [NR] | [NR] |
| Selenium-Total | µg/L | [NT] | [NT] | [NR] | [NR] |

**Report Comments:**

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159471

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034, Newcastle** | | |
| No. of samples: | 20 soils 1 material | | |
| Date samples received / completed instructions received | 20/12/16 | / | 20/12/16 |

**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: / Issue Date: | 4/01/17 | / | 29/12/16 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-4 | 159471-5 | 159471-6 | 159471-7 |
| Your Reference | ---------- - | 101 | 101 | 103 | 103 | 103 |
| Depth | ---------- | 0.35 | 0.45 | 0.4 | 0.6 | 1.2 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 89 | 92 | 87 | 89 | 89 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-8 | 159471-9 | 159471-10 | 159471-11 | 159471-12 |
| Your Reference | ---------- - | 107 | 107 | 111 | 111 | 111 |
| Depth | ---------- | 0.4 | 0.7 | 0.3 | 1.3 | 2.5 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 90 | 91 | 88 | 90 | 80 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-14 | 159471-15 | 159471-16 | 159471-17 | 159471-18 |
| Your Reference | ---------- - | 113 | 113 | 114 | 114 | 118 |
| Depth | ---------- | 0.3 | 0.9 | 0.3 | 0.55 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 87 | 89 | 86 | 89 | 90 |

| vTRH(C6-C10)/BTEXN in Soil | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159471-19 | 159471-20 | 159471-21 |
| Your Reference | ---------- - | 121 | 121 | D13 |
| Depth | ---------- | 0.3 | 1.5 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 |
| vTPHC$_6$ - C$_{10}$ less BTEX (F1) | mg/kg | <25 | <25 | <25 |
| Benzene | mg/kg | <0.2 | <0.2 | <0.2 |
| Toluene | mg/kg | <0.5 | <0.5 | <0.5 |
| Ethylbenzene | mg/kg | <1 | <1 | <1 |
| m+p-xylene | mg/kg | <2 | <2 | <2 |
| o-Xylene | mg/kg | <1 | <1 | <1 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 87 | 88 | 88 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-4 | 159471-5 | 159471-6 | 159471-7 |
| Your Reference | ---------- - | 101 | 101 | 103 | 103 | 103 |
| Depth | ---------- | 0.35 | 0.45 | 0.4 | 0.6 | 1.2 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 79 | 77 | 77 | 77 | 76 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-8 | 159471-9 | 159471-10 | 159471-11 | 159471-12 |
| Your Reference | ---------- - | 107 | 107 | 111 | 111 | 111 |
| Depth | ---------- | 0.4 | 0.7 | 0.3 | 1.3 | 2.5 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 76 | 85 | 83 | 83 | 75 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-14 | 159471-15 | 159471-16 | 159471-17 | 159471-18 |
| Your Reference | ---------- - | 113 | 113 | 114 | 114 | 118 |
| Depth | ---------- | 0.3 | 0.9 | 0.3 | 0.55 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 190 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 140 | <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 | 290 | <100 | <100 | <100 | 110 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | 290 | <50 | <50 | <50 | 110 |
| *Surrogate* o-Terphenyl | % | 87 | 90 | 90 | 91 | 92 |

| svTRH (C10-C40) in Soil | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159471-19 | 159471-20 | 159471-21 |
| Your Reference | ---------- - | 121 | 121 | D13 |
| Depth | ---------- | 0.3 | 1.5 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | <100 | <100 | <100 |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | <50 | <50 | <50 |
| TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2) | mg/kg | <50 | <50 | <50 |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | <100 | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 90 | 91 | 91 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159471-3<br>101<br><br>0.35<br>19/12/2016<br>soil | 159471-4<br>101<br><br>0.45<br>19/12/2016<br>soil | 159471-5<br>103<br><br>0.4<br>19/12/2016<br>soil | 159471-6<br>103<br><br>0.6<br>19/12/2016<br>soil | 159471-7<br>103<br><br>1.2<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| 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 | 0.2 | <0.1 | 0.1 | 0.4 | 0.2 |
| Anthracene | mg/kg | 1.0 | <0.1 | <0.1 | 0.1 | <0.1 |
| Fluoranthene | mg/kg | 2.6 | <0.1 | 0.7 | 1.0 | 0.4 |
| Pyrene | mg/kg | 2.6 | <0.1 | 0.7 | 1.0 | 0.4 |
| Benzo(a)anthracene | mg/kg | 0.9 | <0.1 | 0.3 | 0.4 | 0.2 |
| Chrysene | mg/kg | 0.9 | <0.1 | 0.3 | 0.4 | 0.2 |
| Benzo(b,j+k)fluoranthene | mg/kg | 2 | <0.2 | 0.6 | 0.7 | 0.3 |
| Benzo(a)pyrene | mg/kg | 1.1 | <0.05 | 0.4 | 0.4 | 0.2 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.6 | <0.1 | 0.2 | 0.2 | 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 | 0.9 | <0.1 | 0.3 | 0.3 | 0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 1.4 | <0.5 | <0.5 | 0.6 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 1.4 | <0.5 | <0.5 | 0.6 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 1.4 | <0.5 | <0.5 | 0.6 | <0.5 |
| Total +ve PAH's | mg/kg | 13 | <0.05 | 3.8 | 5.1 | 2.2 |
| *Surrogate p*-Terphenyl-d14 | % | 77 | 82 | 79 | 80 | 76 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159471-8<br>107<br><br>0.4<br>19/12/2016<br>soil | 159471-9<br>107<br><br>0.7<br>19/12/2016<br>soil | 159471-10<br>111<br><br>0.3<br>19/12/2016<br>soil | 159471-11<br>111<br><br>1.3<br>19/12/2016<br>soil | 159471-12<br>111<br><br>2.5<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| 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 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 2.0 | 2.3 | 0.4 | <0.1 | <0.1 |
| Anthracene | mg/kg | 0.5 | 0.9 | 0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 3.3 | 5.0 | 1.1 | <0.1 | <0.1 |
| Pyrene | mg/kg | 3.0 | 4.6 | 1.0 | <0.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | 1.2 | 1.7 | 0.5 | <0.1 | <0.1 |
| Chrysene | mg/kg | 1.1 | 1.6 | 0.6 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 2 | 2.7 | 1 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 1.1 | 1.6 | 0.56 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.6 | 0.9 | 0.3 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.8 | 1.2 | 0.4 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 1.7 | 2.4 | 0.7 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 1.7 | 2.4 | 0.7 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 1.7 | 2.4 | 0.7 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 16 | 23 | 6.0 | <0.05 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 80 | 130 | 76 | 77 | 78 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br>-<br>- | 159471-14<br>113<br><br>0.3<br>19/12/2016<br>soil | 159471-15<br>113<br><br>0.9<br>19/12/2016<br>soil | 159471-16<br>114<br><br>0.3<br>19/12/2016<br>soil | 159471-17<br>114<br><br>0.55<br>19/12/2016<br>soil | 159471-18<br>118<br><br>0.3<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | 0.2 | <0.1 | <0.1 | <0.1 | 0.1 |
| Acenaphthylene | mg/kg | 0.3 | <0.1 | <0.1 | <0.1 | 0.4 |
| Acenaphthene | mg/kg | 1.5 | <0.1 | <0.1 | <0.1 | 0.2 |
| Fluorene | mg/kg | 0.9 | <0.1 | <0.1 | <0.1 | 0.2 |
| Phenanthrene | mg/kg | 13 | <0.1 | 0.5 | <0.1 | 4.7 |
| Anthracene | mg/kg | 3.3 | <0.1 | 0.1 | <0.1 | 0.9 |
| Fluoranthene | mg/kg | 26 | 0.1 | 1.6 | <0.1 | 8.6 |
| Pyrene | mg/kg | 25 | 0.1 | 1.6 | <0.1 | 7.9 |
| Benzo(a)anthracene | mg/kg | 9.2 | <0.1 | 0.7 | <0.1 | 3.2 |
| Chrysene | mg/kg | 7.9 | <0.1 | 0.7 | <0.1 | 2.6 |
| Benzo(b,j+k)fluoranthene | mg/kg | 15 | <0.2 | 1 | <0.2 | 4.7 |
| Benzo(a)pyrene | mg/kg | 9.6 | 0.07 | 0.65 | <0.05 | 2.8 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 5.7 | <0.1 | 0.4 | <0.1 | 1.5 |
| Dibenzo(a,h)anthracene | mg/kg | 1.2 | <0.1 | <0.1 | <0.1 | 0.4 |
| Benzo(g,h,i)perylene | mg/kg | 6.9 | <0.1 | 0.5 | <0.1 | 1.8 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 14 | <0.5 | 0.9 | <0.5 | 4.1 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 14 | <0.5 | 0.9 | <0.5 | 4.1 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 14 | <0.5 | 0.9 | <0.5 | 4.1 |
| Total +ve PAH's | mg/kg | 130 | 0.3 | 8.1 | <0.05 | 40 |
| *Surrogate p*-Terphenyl-d14 | % | 78 | 83 | 77 | 78 | 80 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159471-19<br>121<br><br>0.3<br>19/12/2016<br>soil | 159471-20<br>121<br><br>1.5<br>19/12/2016<br>soil | 159471-21<br>D13<br><br>-<br>19/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | 0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 1.0 | <0.1 | <0.1 |
| Anthracene | mg/kg | 0.2 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 2.3 | <0.1 | <0.1 |
| Pyrene | mg/kg | 2.3 | <0.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | 0.9 | <0.1 | <0.1 |
| Chrysene | mg/kg | 0.9 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 2 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.88 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.5 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.7 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 1.3 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 1.3 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 1.3 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 11 | <0.05 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 77 | 80 | 78 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-5 | 159471-8 | 159471-10 | 159471-14 |
| Your Reference | ---------- | 101 | 103 | 107 | 111 | 113 |
| Depth | ---------- | 0.35 | 0.4 | 0.4 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 122 | 133 | 125 | 123 | 121 |

| Organochlorine Pesticides in soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-16 | 159471-17 | 159471-18 | 159471-19 |
| Your Reference | ---------- - | 114 | 114 | 118 | 121 |
| Depth | ---------- | 0.3 | 0.55 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor Epoxide | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-Chlordane | mg/kg | 0.1 | <0.1 | <0.1 | <0.1 |
| alpha-chlordane | mg/kg | 0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan I | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Dieldrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 122 | 123 | 119 | 121 |

| Organophosphorus Pesticides | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-5 | 159471-8 | 159471-10 | 159471-14 |
| Your Reference | ---------- - | 101 | 103 | 107 | 111 | 113 |
| Depth | ---------- | 0.35 | 0.4 | 0.4 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 122 | 133 | 125 | 123 | 121 |

| Organophosphorus Pesticides | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-16 | 159471-17 | 159471-18 | 159471-19 |
| Your Reference | ---------- - | 114 | 114 | 118 | 121 |
| Depth | ---------- | 0.3 | 0.55 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 122 | 123 | 119 | 121 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-5 | 159471-8 | 159471-10 | 159471-14 |
| Your Reference | ---------- | 101 | 103 | 107 | 111 | 113 |
| Depth | ---------- | 0.35 | 0.4 | 0.4 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| 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* TCLMX | % | 122 | 133 | 125 | 123 | 121 |

| PCBs in Soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-16 | 159471-17 | 159471-18 | 159471-19 |
| Your Reference | ---------- | 114 | 114 | 118 | 121 |
| Depth | ---------- | 0.3 | 0.55 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Aroclor 1016 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1221 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1232 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1242 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1248 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1254 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Aroclor 1260 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCLMX | % | 122 | 123 | 119 | 121 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-4 | 159471-5 | 159471-6 | 159471-7 |
| Your Reference | ---------- | 101 | 101 | 103 | 103 | 103 |
| | - | | | | | |
| Depth | ---------- | 0.35 | 0.45 | 0.4 | 0.6 | 1.2 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 7 | <4 | 5 | 7 | 6 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 32 | 1 | 3 | 3 | 3 |
| Copper | mg/kg | 44 | <1 | 11 | 24 | 34 |
| Lead | mg/kg | 71 | 2 | 26 | 35 | 50 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 19 | <1 | 2 | 3 | 3 |
| Zinc | mg/kg | 160 | 4 | 85 | 77 | 63 |
| Manganese | mg/kg | 250 | 15 | 52 | 64 | 97 |
| Iron | mg/kg | 15,000 | 1,300 | 3,200 | 3,800 | 6,800 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-8 | 159471-9 | 159471-10 | 159471-11 | 159471-12 |
| Your Reference | ---------- | 107 | 107 | 111 | 111 | 111 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 0.7 | 0.3 | 1.3 | 2.5 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | <4 | 5 | 5 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 18 | 2 | 10 | 1 | 2 |
| Copper | mg/kg | 34 | 5 | 47 | <1 | 1 |
| Lead | mg/kg | 110 | 18 | 30 | <1 | 2 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 11 | 1 | 8 | <1 | 1 |
| Zinc | mg/kg | 330 | 72 | 110 | 3 | 5 |
| Manganese | mg/kg | 240 | 71 | 520 | 8 | 18 |
| Iron | mg/kg | 17,000 | 3,000 | 8,600 | 1,100 | 1,600 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-14 | 159471-15 | 159471-16 | 159471-17 | 159471-18 |
| Your Reference | ---------- - | 113 | 113 | 114 | 114 | 118 |
| Depth | ---------- | 0.3 | 0.9 | 0.3 | 0.55 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 5 | <4 | 4 | 4 | 7 |
| Cadmium | mg/kg | 2 | <0.4 | 0.5 | <0.4 | 0.6 |
| Chromium | mg/kg | 26 | 1 | 6 | 1 | 12 |
| Copper | mg/kg | 46 | 2 | 28 | <1 | 170 |
| Lead | mg/kg | 130 | 5 | 46 | <1 | 160 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| Nickel | mg/kg | 12 | <1 | 7 | <1 | 9 |
| Zinc | mg/kg | 300 | 16 | 130 | 2 | 180 |
| Manganese | mg/kg | 690 | 16 | 140 | 12 | 290 |
| Iron | mg/kg | 27,000 | 1,200 | 5,600 | 1,600 | 14,000 |

| Acid Extractable metals in soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-19 | 159471-20 | 159471-21 | 159471-22 |
| Your Reference | ---------- - | 121 | 121 | D13 | 101 - [TRIPLICATE] |
| Depth | ---------- | 0.3 | 1.5 | - | 0.35 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 4 | <4 | 5 | 7 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 17 | 1 | 1 | 13 |
| Copper | mg/kg | 38 | <1 | <1 | 39 |
| Lead | mg/kg | 44 | <1 | <1 | 62 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 10 | <1 | <1 | 9 |
| Zinc | mg/kg | 91 | 1 | 2 | 150 |
| Manganese | mg/kg | 1,300 | 8 | 13 | 250 |
| Iron | mg/kg | 15,000 | 1,000 | 1,400 | 16,000 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-4 | 159471-5 | 159471-6 | 159471-7 |
| Your Reference | ---------- - | 101 | 101 | 103 | 103 | 103 |
| Depth | ---------- | 0.35 | 0.45 | 0.4 | 0.6 | 1.2 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.2 | 9.5 | 9.4 | 9.3 | 9.3 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 130 | 45 | 59 | 66 | 59 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-8 | 159471-9 | 159471-10 | 159471-11 | 159471-12 |
| Your Reference | ---------- - | 107 | 107 | 111 | 111 | 111 |
| Depth | ---------- | 0.4 | 0.7 | 0.3 | 1.3 | 2.5 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.6 | 9.2 | 9.6 | 9.4 | 9.2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 130 | 49 | 150 | 110 | 170 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-13 | 159471-14 | 159471-15 | 159471-16 | 159471-17 |
| Your Reference | ---------- - | 113 | 113 | 113 | 114 | 114 |
| Depth | ---------- | 0.6 | 0.3 | 0.9 | 0.3 | 0.55 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 22/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 22/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | [NA] | 9.1 | 9.4 | 9.3 | 9.3 |
| Electrical Conductivity 1:5 soil:water | µS/cm | [NA] | 130 | 36 | 78 | 58 |
| Presence of Coal Tar* | - | Absent | [NA] | [NA] | [NA] | [NA] |

| Misc Inorg - Soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-18 | 159471-19 | 159471-20 | 159471-21 |
| Your Reference | ---------- - | 118 | 121 | 121 | D13 |
| Depth | ---------- | 0.3 | 0.3 | 1.5 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.3 | 9.5 | 9.4 | 9.5 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 130 | 150 | 68 | 43 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-3 | 159471-4 | 159471-5 | 159471-6 | 159471-7 |
| Your Reference | ---------- | 101 | 101 | 103 | 103 | 103 |
| | - | | | | | |
| Depth | ---------- | 0.35 | 0.45 | 0.4 | 0.6 | 1.2 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 4.5 | 1.9 | 10 | 3.2 | 4.7 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-8 | 159471-9 | 159471-10 | 159471-11 | 159471-12 |
| Your Reference | ---------- | 107 | 107 | 111 | 111 | 111 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 0.7 | 0.3 | 1.3 | 2.5 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 5.5 | 2.4 | 5.5 | 4.4 | 16 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-14 | 159471-15 | 159471-16 | 159471-17 | 159471-18 |
| Your Reference | ---------- | 113 | 113 | 114 | 114 | 118 |
| | - | | | | | |
| Depth | ---------- | 0.3 | 0.9 | 0.3 | 0.55 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 4.6 | 2.3 | 5.0 | 1.7 | 4.1 |

| Moisture | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159471-19 | 159471-20 | 159471-21 |
| Your Reference | ---------- | 121 | 121 | D13 |
| | - | | | |
| Depth | ---------- | 0.3 | 1.5 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 5.8 | 4.2 | 3.2 |

| Asbestos ID - soils NEPM | | |
|---|---|---|
| Our Reference: | UNITS | 159471-2 |
| Your Reference | ---------- - | 101 |
| Depth | ---------- | 0.35 |
| Date Sampled | | 19/12/2016 |
| Type of sample | | soil |
| Date analysed | - | 29/12/2016 |
| Sample mass tested | g | 932.78 |
| Sample Description | - | Brown sandy soil & rocks |
| Asbestos ID in soil (AS4964) >0.1g/kg | - | No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected |
| 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 | – |
| FA and AF Estimation*[#2] | %(w/w) | <0.001 |

| Asbestos ID - materials | | |
|---|---|---|
| Our Reference: | UNITS | 159471-1 |
| Your Reference | ---------- | 101 |
| | - | |
| Depth | ---------- | 0.35 |
| Date Sampled | | 19/12/2016 |
| Type of sample | | material |
| Date analysed | - | 22/12/2016 |
| Mass / Dimension of Sample | - | 65x45x5mm |
| Sample Description | - | Brown compressed fibre cement material |
| Asbestos ID in materials | - | Chrysotile asbestos detected Amosite asbestos detected |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes. |
| Org-014 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>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.<br><br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'TEQ 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.<br>2. 'TEQ 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.<br>3. 'TEQ 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.<br>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-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>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-008 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>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. |

| Method ID | Methodology Summary |
|---|---|
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| RTA T542 | Determination of Phenol in core samples as per RTA test method T542. This procedure gives and indication of whether a sample of asphalt has been made with coal tar. The coal tar method gives an approximate result with a high degree of uncertainty. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours. |
| 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.<br>Results reported denoted with * are outside our scope of NATA accreditation.<br><br>**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)<br><br>**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.<br><br>Estimation = Estimated asbestos weight<br><br>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques. |
| 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. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 25 | Org-016 | <25 | 159471-3 | <25 \|\| <25 | LCS-6 | 110% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 25 | Org-016 | <25 | 159471-3 | <25 \|\| <25 | LCS-6 | 110% |
| Benzene | mg/kg | 0.2 | Org-016 | <0.2 | 159471-3 | <0.2 \|\| <0.2 | LCS-6 | 118% |
| Toluene | mg/kg | 0.5 | Org-016 | <0.5 | 159471-3 | <0.5 \|\| <0.5 | LCS-6 | 106% |
| Ethylbenzene | mg/kg | 1 | Org-016 | <1 | 159471-3 | <1 \|\| <1 | LCS-6 | 107% |
| m+p-xylene | mg/kg | 2 | Org-016 | <2 | 159471-3 | <2 \|\| <2 | LCS-6 | 110% |
| o-Xylene | mg/kg | 1 | Org-016 | <1 | 159471-3 | <1 \|\| <1 | LCS-6 | 109% |
| naphthalene | mg/kg | 1 | Org-014 | <1 | 159471-3 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | | Org-016 | 93 | 159471-3 | 89 \|\| 90 \|\| RPD: 1 | LCS-6 | 92% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 50 | Org-003 | <50 | 159471-3 | <50 \|\| <50 | LCS-5 | 101% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 100 | Org-003 | <100 | 159471-3 | <100 \|\| <100 | LCS-5 | 99% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 100 | Org-003 | <100 | 159471-3 | <100 \|\| <100 | LCS-5 | 91% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 50 | Org-003 | <50 | 159471-3 | <50 \|\| <50 | LCS-5 | 101% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 100 | Org-003 | <100 | 159471-3 | <100 \|\| <100 | LCS-5 | 99% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 100 | Org-003 | <100 | 159471-3 | <100 \|\| <100 | LCS-5 | 91% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 83 | 159471-3 | 79 \|\| 86 \|\| RPD: 8 | LCS-5 | 90% |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| Naphthalene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 109% |
| Acenaphthylene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 107% |
| Phenanthrene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.2 \|\| 0.7 \|\| RPD: 111 | LCS-5 | 103% |
| Anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 1.0 \|\| 0.1 \|\| RPD: 164 | [NR] | [NR] |
| Fluoranthene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 2.6 \|\| 1.7 \|\| RPD: 42 | LCS-5 | 98% |
| Pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 2.6 \|\| 1.8 \|\| RPD: 36 | LCS-5 | 102% |
| Benzo(a)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.9 \|\| 0.6 \|\| RPD: 40 | [NR] | [NR] |
| Chrysene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.9 \|\| 0.6 \|\| RPD: 40 | [NR] | [NR] |
| Benzo(b,j+k) fluoranthene | mg/kg | 0.2 | Org-012 | <0.2 | 159471-3 | 2 \|\| 1 \|\| RPD: 67 | [NR] | [NR] |

| QUALITY CONTROL<br><br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 0.05 | Org-012 | <0.05 | 159471-3 | 1.1 \|\| 0.70 \|\| RPD: 44 | LCS-5 | 111% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.6 \|\| 0.4 \|\| RPD: 40 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | Org-012 | <0.1 | 159471-3 | 0.9 \|\| 0.6 \|\| RPD: 40 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 83 | 159471-3 | 77 \|\| 82 \|\| RPD: 6 | LCS-5 | 97% |

| QUALITY CONTROL<br><br>Organochlorine Pesticides in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| HCB | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 104% |
| gamma-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 92% |
| delta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 105% |
| Heptachlor Epoxide | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 110% |
| gamma-Chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 125% |
| Dieldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 124% |
| Endrin | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 92% |
| pp-DDD | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 127% |
| Endosulfan II | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 115% |
| Methoxychlor | mg/kg | 0.1 | Org-005 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | | Org-005 | 126 | 159471-3 | 122 \|\| 123 \|\| RPD: 1 | LCS-5 | 133% |

| QUALITY CONTROL<br><br>Organophosphorus Pesticides | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 92% |
| Chlorpyriphos-methyl | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 76% |
| Dimethoate | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 79% |
| Fenitrothion | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 89% |
| Malathion | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 87% |
| Parathion | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 98% |
| Ronnel | mg/kg | 0.1 | Org-008 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 91% |
| *Surrogate* TCMX | % | | Org-008 | 126 | 159471-3 | 122 \|\| 123 \|\| RPD: 1 | LCS-5 | 121% |

| QUALITY CONTROL<br><br>PCBs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159471-3 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| Aroclor 1016 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 113% |
| Aroclor 1260 | mg/kg | 0.1 | Org-006 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | | Org-006 | 126 | 159471-3 | 122 \|\| 123 \|\| RPD: 1 | LCS-5 | 121% |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 20/12/2016 | 159471-3 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | 159471-3 | 7 \|\| 9 \|\| RPD: 25 | LCS-5 | 118% |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | 159471-3 | <0.4 \|\| <0.4 | LCS-5 | 108% |
| Chromium | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 32 \|\| 15 \|\| RPD: 72 | LCS-5 | 115% |
| Copper | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 44 \|\| 44 \|\| RPD: 0 | LCS-5 | 110% |
| Lead | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 71 \|\| 64 \|\| RPD: 10 | LCS-5 | 107% |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | 159471-3 | <0.1 \|\| <0.1 | LCS-5 | 92% |
| Nickel | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 19 \|\| 13 \|\| RPD: 38 | LCS-5 | 106% |
| Zinc | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 160 \|\| 150 \|\| RPD: 6 | LCS-5 | 109% |
| Manganese | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 250 \|\| 320 \|\| RPD: 25 | LCS-5 | 101% |
| Iron | mg/kg | 1 | Metals-020 | <1 | 159471-3 | 15000 \|\| 29000 \|\| RPD: 64 | LCS-5 | 104% |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 23/12/2016 | 159471-3 | 23/12/2016 \|\| 23/12/2016 | LCS-1 | 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | 159471-3 | 23/12/2016 \|\| 23/12/2016 | LCS-1 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 159471-3 | 9.2 \|\| 9.3 \|\| RPD: 1 | LCS-1 | 101% |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | 159471-3 | 130 \|\| 130 \|\| RPD: 0 | LCS-1 | 103% |
| Presence of Coal Tar* | - | | RTA T542 | Absent | [NT] | [NT] | LCS-1 | Present |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159471-12 | 20/12/2016 \|\| 20/12/2016 | 159471-5 | 20/12/2016 |
| Date analysed | - | 159471-12 | 21/12/2016 \|\| 21/12/2016 | 159471-5 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159471-12 | <25 \|\| <25 | 159471-5 | 98% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159471-12 | <25 \|\| <25 | 159471-5 | 98% |
| Benzene | mg/kg | 159471-12 | <0.2 \|\| <0.2 | 159471-5 | 108% |
| Toluene | mg/kg | 159471-12 | <0.5 \|\| <0.5 | 159471-5 | 93% |
| Ethylbenzene | mg/kg | 159471-12 | <1 \|\| <1 | 159471-5 | 97% |
| m+p-xylene | mg/kg | 159471-12 | <2 \|\| <2 | 159471-5 | 95% |
| o-Xylene | mg/kg | 159471-12 | <1 \|\| <1 | 159471-5 | 93% |
| naphthalene | mg/kg | 159471-12 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159471-12 | 80 \|\| 83 \|\| RPD: 4 | 159471-5 | 84% |

| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159471-12 | 20/12/2016 \|\| 20/12/2016 | 159471-5 | 20/12/2016 |
| Date analysed | - | 159471-12 | 21/12/2016 \|\| 21/12/2016 | 159471-5 | 21/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159471-12 | <50 \|\| <50 | 159471-5 | 95% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159471-12 | <100 \|\| <100 | 159471-5 | 92% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159471-12 | <100 \|\| <100 | 159471-5 | 90% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159471-12 | <50 \|\| <50 | 159471-5 | 95% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159471-12 | <100 \|\| <100 | 159471-5 | 92% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159471-12 | <100 \|\| <100 | 159471-5 | 90% |
| *Surrogate* o-Terphenyl | % | 159471-12 | 75 \|\| 67 \|\| RPD: 11 | 159471-5 | 77% |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159471-12 | 21/12/2016 \|\| 21/12/2016 | 159471-5 | 21/12/2016 |
| Date analysed | - | 159471-12 | 21/12/2016 \|\| 21/12/2016 | 159471-5 | 21/12/2016 |
| Naphthalene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 110% |
| Acenaphthylene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 105% |
| Phenanthrene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 94% |
| Anthracene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 84% |
| Pyrene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 92% |
| Benzo(a)anthracene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chrysene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159471-12 | <0.2 \|\| <0.2 | [NR] | [NR] |
| Benzo(a)pyrene | mg/kg | 159471-12 | <0.05 \|\| <0.05 | 159471-5 | 98% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159471-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159471-12 | 78 \|\| 78 \|\| RPD: 0 | 159471-5 | 98% |

| QUALITY CONTROL Organochlorine Pesticides in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | [NT] | [NT] | 159471-5 | 20/12/2016 |
| Date analysed | - | [NT] | [NT] | 159471-5 | 21/12/2016 |
| HCB | mg/kg | [NT] | [NT] | [NR] | [NR] |
| alpha-BHC | mg/kg | [NT] | [NT] | 159471-5 | 113% |
| gamma-BHC | mg/kg | [NT] | [NT] | [NR] | [NR] |
| beta-BHC | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Heptachlor | mg/kg | [NT] | [NT] | 159471-5 | 102% |
| delta-BHC | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aldrin | mg/kg | [NT] | [NT] | 159471-5 | 114% |
| Heptachlor Epoxide | mg/kg | [NT] | [NT] | 159471-5 | 117% |
| gamma-Chlordane | mg/kg | [NT] | [NT] | [NR] | [NR] |
| alpha-chlordane | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Endosulfan I | mg/kg | [NT] | [NT] | [NR] | [NR] |
| pp-DDE | mg/kg | [NT] | [NT] | 159471-5 | 130% |
| Dieldrin | mg/kg | [NT] | [NT] | 159471-5 | 127% |
| Endrin | mg/kg | [NT] | [NT] | 159471-5 | 103% |
| pp-DDD | mg/kg | [NT] | [NT] | 159471-5 | 125% |
| Endosulfan II | mg/kg | [NT] | [NT] | [NR] | [NR] |
| pp-DDT | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | [NT] | [NT] | 159471-5 | 92% |
| Methoxychlor | mg/kg | [NT] | [NT] | [NR] | [NR] |
| *Surrogate* TCMX | % | [NT] | [NT] | 159471-5 | 127% |

| QUALITY CONTROL Organophosphorus Pesticides | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | [NT] | [NT] | 159471-5 | 20/12/2016 |
| Date analysed | - | [NT] | [NT] | 159471-5 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Chlorpyriphos | mg/kg | [NT] | [NT] | 159471-5 | 83% |
| Chlorpyriphos-methyl | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Diazinon | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Dichlorvos | mg/kg | [NT] | [NT] | 159471-5 | 72% |
| Dimethoate | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Ethion | mg/kg | [NT] | [NT] | 159471-5 | 97% |
| Fenitrothion | mg/kg | [NT] | [NT] | 159471-5 | 88% |
| Malathion | mg/kg | [NT] | [NT] | 159471-5 | 75% |
| Parathion | mg/kg | [NT] | [NT] | 159471-5 | 88% |
| Ronnel | mg/kg | [NT] | [NT] | 159471-5 | 89% |
| *Surrogate* TCMX | % | [NT] | [NT] | 159471-5 | 100% |
| QUALITY CONTROL PCBs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | [NT] | [NT] | 159471-5 | 20/12/2016 |
| Date analysed | - | [NT] | [NT] | 159471-5 | 21/12/2016 |
| Aroclor 1016 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aroclor 1221 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aroclor 1232 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aroclor 1242 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aroclor 1248 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Aroclor 1254 | mg/kg | [NT] | [NT] | 159471-5 | 100% |
| Aroclor 1260 | mg/kg | [NT] | [NT] | [NR] | [NR] |
| *Surrogate* TCLMX | % | [NT] | [NT] | 159471-5 | 100% |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | 159471-12 | 20/12/2016 \|\| 20/12/2016 | 159471-5 | 20/12/2016 |
| Date analysed | - | 159471-12 | 20/12/2016 \|\| 20/12/2016 | 159471-5 | 20/12/2016 |
| Arsenic | mg/kg | 159471-12 | <4 \|\| <4 | 159471-5 | 113% |
| Cadmium | mg/kg | 159471-12 | <0.4 \|\| <0.4 | 159471-5 | 107% |
| Chromium | mg/kg | 159471-12 | 2 \|\| 2 \|\| RPD: 0 | 159471-5 | 115% |
| Copper | mg/kg | 159471-12 | 1 \|\| 1 \|\| RPD: 0 | 159471-5 | 117% |
| Lead | mg/kg | 159471-12 | 2 \|\| 1 \|\| RPD: 67 | 159471-5 | 104% |
| Mercury | mg/kg | 159471-12 | <0.1 \|\| <0.1 | 159471-5 | 93% |
| Nickel | mg/kg | 159471-12 | 1 \|\| <1 | 159471-5 | 108% |
| Zinc | mg/kg | 159471-12 | 5 \|\| 4 \|\| RPD: 22 | 159471-5 | 108% |
| Manganese | mg/kg | 159471-12 | 18 \|\| 16 \|\| RPD: 12 | 159471-5 | ## |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Iron | mg/kg | 159471-12 | 1600 \|\| 1500 \|\| RPD: 6 | 159471-5 | # |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159471-12 | 23/12/2016 \|\| 23/12/2016 |
| Date analysed | - | 159471-12 | 23/12/2016 \|\| 23/12/2016 |
| pH 1:5 soil:water | pH Units | 159471-12 | 9.2 \|\| 9.2 \|\| RPD: 0 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159471-12 | 170 \|\| 140 \|\| RPD: 19 |
| Presence of Coal Tar* | - | [NT] | [NT] |

**Report Comments:**

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159471-3 for Cr and Fe. Therefore a triplicate result has been issued as laboratory sample number 159471-22.

Acid Extractable 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.

Acid Extractable Metals in Soil: ## 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.

PAH in soil:
The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.

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.

Asbestos ID was analysed by Approved Identifier: Lucy Zhu
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NR: Test not required
<: Less than
PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than
NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159471-A

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | |
|---|---|
| Your Reference: | **91034, Newcastle** |
| No. of samples: | Additional testing |
| Date samples received / completed instructions received | 20/12/16 / 03/01/17 |

**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: / Issue Date: | 10/01/17 / 10/01/17 |
| Date of Preliminary Report: | Not Issued |

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

**Results Approved By:**

David Springer
General Manager



ACCREDITED FOR TECHNICAL COMPETENCE

| Metals in TCLP USEPA1311 | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-A-3 | 159471-A-8 | 159471-A-9 | 159471-A-14 | 159471-A-18 |
| Your Reference | ---------- | 101 | 107 | 107 | 113 | 118 |
| | - | | | | | |
| Depth | ---------- | 0.35 | 0.4 | 0.7 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| Date analysed | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| pH of soil for fluid# determ. | pH units | 9.4 | 9.5 | 9.2 | 9.2 | 9.2 |
| pH of soil TCLP (after HCl) | pH units | 1.8 | 1.6 | 1.5 | 1.6 | 1.6 |
| Extraction fluid used | - | 1 | 1 | 1 | 1 | 1 |
| pH of final Leachate | pH units | 6.3 | 7.9 | 8.6 | 5.4 | 5.9 |
| Lead in TCLP | mg/L | [NA] | <0.03 | [NA] | 0.04 | 0.04 |

| PAHs in TCLP (USEPA 1311) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-A-3 | 159471-A-8 | 159471-A-9 | 159471-A-14 | 159471-A-18 |
| Your Reference | ---------- | 101 | 107 | 107 | 113 | 118 |
| | - | | | | | |
| Depth | ---------- | 0.35 | 0.4 | 0.7 | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Naphthalene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Acenaphthylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Acenaphthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| Fluorene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Phenanthrene in TCLP | mg/L | 0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| Anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Fluoranthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(a)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Chrysene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(bjk)fluoranthene in TCLP | mg/L | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Benzo(a)pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Indeno(1,2,3-c,d)pyrene - TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Dibenzo(a,h)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(g,h,i)perylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total +ve PAH's | mg/L | 0.001 | NIL (+)VE | NIL (+)VE | 0.0020 | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 89 | 86 | 78 | 92 | 97 |

| Metals-ASLP Neutral (ICP-MS) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-A-7 | 159471-A-9 | 159471-A-10 | 159471-A-14 | 159471-A-15 |
| Your Reference | ---------- | 103 | 107 | 111 | 113 | 113 |
| | - | | | | | |
| Depth | ---------- | 1.2 | 0.7 | 0.3 | 0.3 | 0.9 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 9.1 | 5.9 | 8.9 | 8.3 | 7.9 |
| Arsenic in ASLP | µg/L | 8 | 3 | 8 | 6 | 2 |
| Cadmium in ASLP | µg/L | 0.1 | 4.0 | 0.2 | 0.6 | <0.1 |
| Chromium in ASLP | µg/L | 1 | <1 | 3 | 9 | 1 |
| Copper in ASLP | µg/L | 43 | 28 | 30 | 17 | 2 |
| Lead in ASLP | µg/L | 51 | 27 | 33 | 57 | 5 |
| Mercury in ASLP | µg/L | <0.05 | <0.05 | 0.1 | 0.1 | <0.05 |
| Nickel in ASLP | µg/L | 1 | 5 | 4 | 2 | <1 |
| Zinc in ASLP | µg/L | 91 | 1,000 | 150 | 130 | 12 |
| Manganese in ASLP | µg/L | 30 | 1,600 | 60 | 68 | 20 |
| Beryllium in ASLP | µg/L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron in ASLP | µg/L | 30 | 90 | 40 | 50 | <20 |
| Molybdenum in ASLP | µg/L | <1 | 2 | 4 | 3 | <1 |
| Selenium in ASLP | µg/L | <1 | <1 | <1 | <1 | <1 |

| Metals-ASLP Neutral (ICP-MS) | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159471-A-18 | 159471-A-19 |
| Your Reference | ---------- | 118 | 121 |
| | - | | |
| Depth | ---------- | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 8.5 | 8.0 |
| Arsenic in ASLP | µg/L | 9 | 4 |
| Cadmium in ASLP | µg/L | 0.3 | 1 |
| Chromium in ASLP | µg/L | 3 | 1 |
| Copper in ASLP | µg/L | 110 | 4 |
| Lead in ASLP | µg/L | 100 | 20 |
| Mercury in ASLP | µg/L | 0.2 | <0.05 |
| Nickel in ASLP | µg/L | 3 | 1 |
| Zinc in ASLP | µg/L | 150 | 380 |
| Manganese in ASLP | µg/L | 75 | 20 |
| Beryllium in ASLP | µg/L | <0.5 | <0.5 |
| Boron in ASLP | µg/L | 50 | <20 |
| Molybdenum in ASLP | µg/L | 2 | <1 |
| Selenium in ASLP | µg/L | <1 | <1 |

| sTRH in water leach<br>Our Reference:<br>Your Reference | UNITS<br>---------- | 159471-A-7<br>103 | 159471-A-9<br>107 | 159471-A-10<br>111 | 159471-A-14<br>113 | 159471-A-15<br>113 |
|---|---|---|---|---|---|---|
| Depth | ---------- | 1.2 | 0.7 | 0.3 | 0.3 | 0.9 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | 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 | % | 113 | 108 | 103 | 115 | 113 |

| sTRH in water leach<br>Our Reference:<br>Your Reference | UNITS<br>---------- | 159471-A-18<br>118 | 159471-A-19<br>121 |
|---|---|---|---|
| Depth | ---------- | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 120 | 118 |

| PAHs - ASLP Trace Level<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159471-A-7<br>103<br><br>1.2<br>19/12/2016<br>soil | 159471-A-9<br>107<br><br>0.7<br>19/12/2016<br>soil | 159471-A-10<br>111<br><br>0.3<br>19/12/2016<br>soil | 159471-A-14<br>113<br><br>0.3<br>19/12/2016<br>soil | 159471-A-15<br>113<br><br>0.9<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | <0.02 | 0.09 | <0.02 | <0.02 | 0.09 |
| Acenaphthylene | µg/L | 0.01 | 0.03 | <0.01 | <0.01 | 0.02 |
| Acenaphthene | µg/L | 0.08 | 0.03 | <0.01 | 0.02 | 0.02 |
| Fluorene | µg/L | 0.03 | 0.03 | <0.01 | <0.01 | 0.02 |
| Phenanthrene | µg/L | 0.05 | 0.05 | 0.05 | 0.11 | 0.11 |
| Anthracene | µg/L | 0.02 | 0.01 | 0.01 | 0.10 | 0.02 |
| Fluoranthene | µg/L | 0.05 | 0.10 | 0.09 | 0.29 | 0.05 |
| Pyrene | µg/L | 0.04 | 0.09 | 0.10 | 0.28 | 0.04 |
| Benzo(a)anthracene | µg/L | <0.01 | 0.01 | 0.02 | 0.11 | <0.01 |
| Chrysene | µg/L | <0.01 | 0.01 | 0.03 | 0.12 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 | <0.02 | 0.04 | 0.2 | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 | <0.01 | 0.02 | 0.10 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 | 0.02 | 0.06 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 | <0.01 | 0.02 | 0.09 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.28 | 0.45 | 0.40 | 1.5 | 0.37 |
| *Surrogate p*-Terphenyl-d14 | % | 70 | 89 | 70 | 76 | 71 |

| PAHs - ASLP Trace Level<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159471-A-18<br>118<br><br>0.3<br>19/12/2016<br>soil | 159471-A-19<br>121<br><br>0.3<br>19/12/2016<br>soil |
|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | 0.08 |
| Acenaphthylene | µg/L | <0.01 | 0.01 |
| Acenaphthene | µg/L | <0.01 | <0.01 |
| Fluorene | µg/L | 0.03 | 0.03 |
| Phenanthrene | µg/L | 0.16 | 0.14 |
| Anthracene | µg/L | 0.01 | 0.02 |
| Fluoranthene | µg/L | 0.07 | 0.02 |
| Pyrene | µg/L | 0.07 | 0.01 |
| Benzo(a)anthracene | µg/L | 0.02 | <0.01 |
| Chrysene | µg/L | 0.02 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.40 | 0.31 |
| *Surrogate p*-Terphenyl-d14 | % | 85 | 72 |

| Metals-ASLP Sea Water (ICP-MS) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-A-7 | 159471-A-9 | 159471-A-10 | 159471-A-14 | 159471-A-15 |
| Your Reference | ---------- | 103 | 107 | 111 | 113 | 113 |
| | - | | | | | |
| Depth | ---------- | 1.2 | 0.7 | 0.3 | 0.3 | 0.9 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 |
| Arsenic in ASLP Sea Water | µg/L | 3 | 3 | 3 | 2 | 2 |
| Cadmium in ASLP Sea Water | µg/L | 0.5 | 7.7 | 1.1 | 7.6 | 0.2 |
| Chromium in ASLP Sea Water | µg/L | <1 | <1 | <1 | <1 | <1 |
| Copper in ASLP Sea Water | µg/L | 4 | 3 | 6 | 3 | 2 |
| Lead in ASLP Sea Water | µg/L | 1 | 6 | <1 | 1 | <1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 1 | 1 | 2 | 1 | 3 |
| Zinc in ASLP Sea Water | µg/L | 19 | 320 | 21 | 31 | 13 |
| Manganese in ASLP Sea Water | µg/L | <5 | 10 | 79 | 20 | 10 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,500 | 4,700 | 4,600 | 4,500 | 4,500 |
| Molybdenum in ASLP Sea Water | µg/L | 12 | 12 | 14 | 13 | 12 |
| Selenium in ASLP Sea Water | µg/L | <1 | <1 | <1 | <1 | <1 |

| Metals-ASLP Sea Water (ICP-MS) | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159471-A-18 | 159471-A-19 |
| Your Reference | ---------- | 118 | 121 |
| | - | | |
| Depth | ---------- | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 7.9 | 7.8 |
| Arsenic in ASLP Sea Water | µg/L | 3 | 3 |
| Cadmium in ASLP Sea Water | µg/L | 1.8 | 1.2 |
| Chromium in ASLP Sea Water | µg/L | <1 | <1 |
| Copper in ASLP Sea Water | µg/L | 10 | 3 |
| Lead in ASLP Sea Water | µg/L | 2 | 1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 1 | 1 |
| Zinc in ASLP Sea Water | µg/L | 23 | 26 |
| Manganese in ASLP Sea Water | µg/L | 10 | 20 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,600 | 4,600 |
| Molybdenum in ASLP Sea Water | µg/L | 13 | 14 |
| Selenium in ASLP Sea Water | µg/L | <1 | <1 |

| sTRH in sea water leach<br>Our Reference:<br>Your Reference | UNITS<br>---------- | 159471-A-7<br>103 | 159471-A-9<br>107 | 159471-A-10<br>111 | 159471-A-14<br>113 | 159471-A-15<br>113 |
|---|---|---|---|---|---|---|
| Depth | - | 1.2 | 0.7 | 0.3 | 0.3 | 0.9 |
| Date Sampled | ---------- | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | 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 | % | 120 | 110 | 120 | 113 | 110 |

| sTRH in sea water leach<br>Our Reference:<br>Your Reference | UNITS<br>---------- | 159471-A-18<br>118 | 159471-A-19<br>121 |
|---|---|---|---|
| Depth | - | 0.3 | 0.3 |
| Date Sampled | ---------- | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 110 | 113 |

| PAHs - ASLP Sea Water Trace Level | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159471-A-7 | 159471-A-9 | 159471-A-10 | 159471-A-14 | 159471-A-15 |
| Your Reference | ---------- | 103 | 107 | 111 | 113 | 113 |
| Depth | ---------- | 1.2 | 0.7 | 0.3 | 0.3 | 0.9 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | <0.02 | 0.25 | 0.04 | 0.51 | <0.02 |
| Acenaphthylene | µg/L | <0.01 | 0.01 | <0.01 | 0.04 | <0.01 |
| Acenaphthene | µg/L | <0.01 | 0.16 | <0.01 | 1.6 | <0.01 |
| Fluorene | µg/L | <0.01 | 0.09 | 0.03 | 0.68 | <0.01 |
| Phenanthrene | µg/L | 0.08 | 0.32 | 0.17 | 3.4 | 0.08 |
| Anthracene | µg/L | 0.01 | 0.06 | 0.01 | 0.59 | <0.01 |
| Fluoranthene | µg/L | 0.01 | 0.08 | 0.04 | 0.98 | 0.02 |
| Pyrene | µg/L | 0.01 | 0.06 | 0.03 | 0.75 | 0.01 |
| Benzo(a)anthracene | µg/L | <0.01 | <0.01 | <0.01 | 0.03 | <0.01 |
| Chrysene | µg/L | <0.01 | <0.01 | <0.01 | 0.03 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.11 | 1.0 | 0.32 | 8.6 | 0.11 |
| *Surrogate p*-Terphenyl-d14 | % | 84 | 74 | 80 | 90 | 82 |

| PAHs - ASLP Sea Water Trace Level | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159471-A-18 | 159471-A-19 |
| Your Reference | ---------- - | 118 | 121 |
| Depth | ---------- | 0.3 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.06 | 0.1 |
| Acenaphthylene | µg/L | <0.01 | <0.01 |
| Acenaphthene | µg/L | <0.01 | 0.21 |
| Fluorene | µg/L | <0.01 | 0.37 |
| Phenanthrene | µg/L | 0.05 | 1.2 |
| Anthracene | µg/L | <0.01 | 0.14 |
| Fluoranthene | µg/L | 0.01 | 0.19 |
| Pyrene | µg/L | 0.01 | 0.14 |
| Benzo(a)anthracene | µg/L | <0.01 | 0.01 |
| Chrysene | µg/L | <0.01 | 0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.13 | 2.3 |
| *Surrogate p*-Terphenyl-d14 | % | 76 | 79 |

| Method ID | Methodology Summary |
|---|---|
| Inorg-004 | Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. |
| EXTRACT.7 | Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Metals-020 ICP-AES | Determination of various metals by ICP-AES. |
| Org-012 | Leachates are extracted with Dichloromethane and analysed by GC-MS. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997. |
| Metals-021 ASLP | Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003_NEUTRAL | Leachates are extracted with Dichloromethane and analysed by GC-FID. |

| QUALITY CONTROL<br><br>Metals in TCLP USEPA1311 | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Date analysed | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Lead in TCLP | mg/L | 0.03 | Metals-020 ICP-AES | <0.03 | [NT] | [NT] | LCS-W1 | 96% |
| QUALITY CONTROL<br><br>PAHs in TCLP (USEPA 1311) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Naphthalene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 91% |
| Acenaphthylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluorene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 90% |
| Phenanthrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 93% |
| Anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 81% |
| Pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 87% |
| Benzo(a)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Chrysene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(bjk)fluoranthene in TCLP | mg/L | 0.002 | Org-012 | <0.002 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 109% |
| Indeno(1,2,3-c,d)pyrene -TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 80 | [NT] | [NT] | LCS-W1 | 92% |

| QUALITY CONTROL<br><br>Metals-ASLP Neutral (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 | 159471-A-9 | 04/01/2017 \|\| 04/01/2017 | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 | 159471-A-9 | 09/01/2017 \|\| 09/01/2017 | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 3 \|\| 4 \|\| RPD: 29 | LCS-W1 | 98% |
| Cadmium in ASLP | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | 159471-A-9 | 4.0 \|\| 3.9 \|\| RPD: 3 | LCS-W1 | 99% |
| Chromium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | <1 \|\| <1 | LCS-W1 | 94% |
| Copper in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 28 \|\| 28 \|\| RPD: 0 | LCS-W1 | 91% |
| Lead in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 27 \|\| 27 \|\| RPD: 0 | LCS-W1 | 98% |
| Mercury in ASLP | µg/L | 0.05 | Metals-021 ASLP | <0.05 | 159471-A-9 | <0.05 \|\| <0.05 | LCS-W1 | 90% |
| Nickel in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 5 \|\| 5 \|\| RPD: 0 | LCS-W1 | 93% |
| Zinc in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 1000 \|\| 1100 \|\| RPD: 10 | LCS-W1 | 99% |
| Manganese in ASLP | µg/L | 5 | Metals-022 ICP-MS | <5 | 159471-A-9 | 1600 \|\| 1700 \|\| RPD: 6 | LCS-W1 | 93% |
| Beryllium in ASLP | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | 159471-A-9 | <0.5 \|\| <0.5 | LCS-W1 | 90% |
| Boron in ASLP | µg/L | 20 | Metals-022 ICP-MS | <20 | 159471-A-9 | 90 \|\| 92 \|\| RPD: 2 | LCS-W1 | 93% |
| Molybdenum in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | 2 \|\| 2 \|\| RPD: 0 | LCS-W1 | 94% |
| Selenium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159471-A-9 | <1 \|\| <1 | LCS-W1 | 95% |

| QUALITY CONTROL<br>sTRH in water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 79% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 115% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 79% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 115% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 114 | [NT] | [NT] | LCS-W1 | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W1 | 100% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 110% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 130% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 96% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 77% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 70 | [NT] | [NT] | LCS-W1 | 80% |

| QUALITY CONTROL<br><br>Metals-ASLP Sea Water (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 92% |
| Cadmium in ASLP Sea Water | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W1 | 97% |
| Chromium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 89% |
| Copper in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 88% |
| Lead in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 97% |
| Mercury in ASLP Sea Water | µg/L | 0.05 | Metals-021 ASLP | <0.05 | [NT] | [NT] | LCS-W1 | 89% |
| Nickel in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 88% |
| Zinc in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 89% |
| Manganese in ASLP Sea Water | µg/L | 5 | Metals-022 ICP-MS | <5 | [NT] | [NT] | LCS-W1 | 87% |
| Beryllium in ASLP Sea Water | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W1 | 83% |
| Boron in ASLP Sea Water | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W1 | 96% |
| Molybdenum in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 93% |
| Selenium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 91% |

| QUALITY CONTROL<br>sTRH in sea water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 79% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 115% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 79% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 115% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 114 | [NT] | [NT] | LCS-W1 | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Sea Water Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W1 | 100% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 110% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 130% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 96% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 77% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 70 | [NT] | [NT] | LCS-W1 | 80% |

| QUALITY CONTROL<br>Metals-ASLP Sea Water (ICP-MS) | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159471-A-7 | 04/01/2017 \|\| 04/01/2017 | 159471-A-9 | 04/01/2017 |
| Date analysed | - | 159471-A-7 | 09/01/2017 \|\| 09/01/2017 | 159471-A-9 | 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | 159471-A-7 | 3 \|\| 3 \|\| RPD: 0 | 159471-A-9 | 98% |
| Cadmium in ASLP Sea Water | µg/L | 159471-A-7 | 0.5 \|\| 0.5 \|\| RPD: 0 | 159471-A-9 | 87% |

| QUALITY CONTROL<br>Metals-ASLP Sea Water (ICP-MS) | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Chromium in ASLP Sea Water | µg/L | 159471-A-7 | <1 \|\| <1 | 159471-A-9 | 91% |
| Copper in ASLP Sea Water | µg/L | 159471-A-7 | 4 \|\| 4 \|\| RPD: 0 | 159471-A-9 | 91% |
| Lead in ASLP Sea Water | µg/L | 159471-A-7 | 1 \|\| 1 \|\| RPD: 0 | 159471-A-9 | 84% |
| Mercury in ASLP Sea Water | µg/L | 159471-A-7 | <0.05 \|\| <0.05 | 159471-A-9 | 77% |
| Nickel in ASLP Sea Water | µg/L | 159471-A-7 | 1 \|\| 1 \|\| RPD: 0 | 159471-A-9 | 80% |
| Zinc in ASLP Sea Water | µg/L | 159471-A-7 | 19 \|\| 17 \|\| RPD: 11 | 159471-A-9 | 85% |
| Manganese in ASLP Sea Water | µg/L | 159471-A-7 | <5 \|\| 5 | 159471-A-9 | 89% |
| Beryllium in ASLP Sea Water | µg/L | 159471-A-7 | <0.5 \|\| <0.5 | 159471-A-9 | 80% |
| Boron in ASLP Sea Water | µg/L | 159471-A-7 | 4500 \|\| 4600 \|\| RPD: 2 | 159471-A-9 | # |
| Molybdenum in ASLP Sea Water | µg/L | 159471-A-7 | 12 \|\| 12 \|\| RPD: 0 | 159471-A-9 | 110% |
| Selenium in ASLP Sea Water | µg/L | 159471-A-7 | <1 \|\| <1 | 159471-A-9 | 88% |

**Report Comments:**

Metals-ASLP Seawater: # 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.

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159472

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034, Newcastle** | | |
| No. of samples: | 24 soils 4 material | | |
| Date samples received / completed instructions received | 20/12/16 | / | 20/12/16 |

**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: / Issue Date: | 4/01/17 | / | 29/12/16 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-3 | 159472-5 | 159472-6 |
| Your Reference | ---------- - | 119 | 119 | 119 | 120 | 120 |
| Depth | ---------- | 0.3 | 0.7 | 2.4 | 0.3 | 2.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 87 | 88 | 84 | 91 | 85 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-7 | 159472-8 | 159472-9 | 159472-10 | 159472-11 |
| Your Reference | ---------- - | 122 | 122 | 122 | 124 | 124 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 87 | 92 | 90 | 92 | 85 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-12 | 159472-13 | 159472-14 | 159472-15 | 159472-16 |
| Your Reference | ---------- - | 125 | 125 | 126 | 126 | 127 |
| Depth | ---------- | 0.5 | 1.5 | 0.5 | 1.8 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 15/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 92 | 93 | 87 | 87 | 90 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-17 | 159472-18 | 159472-21 | 159472-22 | 159472-23 |
| Your Reference | ---------- - | 127 | 127 | 128 | 128 | 128 |
| Depth | ---------- | 0.6 | 2.7 | 0.3 | 0.6 | 1.5 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 88 | 84 | 87 | 89 | 91 |

| vTRH(C6-C10)/BTEXN in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159472-26 | 159472-27 |
| Your Reference | ---------- - | D7 | D6 |
| Depth | ---------- | - | - |
| Date Sampled | | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 |
| vTPHC$_6$ - C$_{10}$ less BTEX (F1) | mg/kg | <25 | <25 |
| Benzene | mg/kg | <0.2 | <0.2 |
| Toluene | mg/kg | <0.5 | <0.5 |
| Ethylbenzene | mg/kg | <1 | <1 |
| m+p-xylene | mg/kg | <2 | <2 |
| o-Xylene | mg/kg | <1 | <1 |
| Total +ve Xylenes | mg/kg | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 91 | 92 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-3 | 159472-5 | 159472-6 |
| Your Reference | ---------- - | 119 | 119 | 119 | 120 | 120 |
| Depth | ---------- | 0.3 | 0.7 | 2.4 | 0.3 | 2.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 87 | 90 | 86 | 88 | 87 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-7 | 159472-8 | 159472-9 | 159472-10 | 159472-11 |
| Your Reference | ---------- - | 122 | 122 | 122 | 124 | 124 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 110 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 2,300 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 890 | <100 | <100 | <100 | <100 |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 310 | <50 | <50 | <50 | <50 |
| TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2) | mg/kg | 310 | <50 | <50 | <50 | <50 |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 2,800 | <100 | <100 | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 450 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | 3,500 | <50 | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | # | 89 | 89 | 91 | 85 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-12 | 159472-13 | 159472-14 | 159472-15 | 159472-16 |
| Your Reference | ---------- - | 125 | 125 | 126 | 126 | 127 |
| Depth | ---------- | 0.5 | 1.5 | 0.5 | 1.8 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 15/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 91 | 89 | 87 | 86 | 92 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-17 | 159472-18 | 159472-21 | 159472-22 | 159472-23 |
| Your Reference | ---------- - | 127 | 127 | 128 | 128 | 128 |
| Depth | ---------- | 0.6 | 2.7 | 0.3 | 0.6 | 1.5 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | 150 | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | <50 | 150 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 92 | 83 | 89 | 90 | 90 |

| svTRH (C10-C40) in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159472-26 | 159472-27 |
| Your Reference | ---------- | D7 | D6 |
| | - | | |
| Depth | ---------- | - | - |
| Date Sampled | | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| $TRHC_{10}$ - $C_{14}$ | mg/kg | <50 | <50 |
| $TRHC_{15}$ - $C_{28}$ | mg/kg | <100 | <100 |
| $TRHC_{29}$ - $C_{36}$ | mg/kg | <100 | <100 |
| $TRH>C_{10}$-$C_{16}$ | mg/kg | <50 | <50 |
| $TRH>C_{10}$ - $C_{16}$ less Naphthalene (F2) | mg/kg | <50 | <50 |
| $TRH>C_{16}$-$C_{34}$ | mg/kg | <100 | <100 |
| $TRH>C_{34}$-$C_{40}$ | mg/kg | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 90 | 90 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-1<br>119<br><br>0.3<br>16/12/2016<br>soil | 159472-2<br>119<br><br>0.7<br>16/12/2016<br>soil | 159472-3<br>119<br><br>2.4<br>16/12/2016<br>soil | 159472-5<br>120<br><br>0.3<br>16/12/2016<br>soil | 159472-6<br>120<br><br>2.3<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 1.3 | <0.1 | <0.1 | 0.4 | <0.1 |
| Anthracene | mg/kg | 0.3 | <0.1 | <0.1 | 0.1 | <0.1 |
| Fluoranthene | mg/kg | 3.9 | 0.2 | <0.1 | 0.9 | <0.1 |
| Pyrene | mg/kg | 3.9 | <0.1 | <0.1 | 0.7 | <0.1 |
| Benzo(a)anthracene | mg/kg | 1.6 | <0.1 | <0.1 | 0.3 | <0.1 |
| Chrysene | mg/kg | 1.5 | <0.1 | <0.1 | 0.4 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 2.9 | <0.2 | <0.2 | 0.5 | <0.2 |
| Benzo(a)pyrene | mg/kg | 1.6 | 0.06 | <0.05 | 0.3 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.9 | <0.1 | <0.1 | 0.2 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 1.2 | <0.1 | <0.1 | 0.2 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 2.4 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 2.4 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 2.4 | <0.5 | <0.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 20 | 0.3 | <0.05 | 4.0 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 73 | 78 | 66 | 72 | 67 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-7<br>122<br><br>0.3<br>16/12/2016<br>soil | 159472-8<br>122<br><br>0.6<br>16/12/2016<br>soil | 159472-9<br>122<br><br>1.4<br>16/12/2016<br>soil | 159472-10<br>124<br><br>0.6<br>16/12/2016<br>soil | 159472-11<br>124<br><br>2.7<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | 15 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | 50 | 0.3 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | 28 | 0.2 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 230 | 3.0 | <0.1 | 0.1 | <0.1 |
| Anthracene | mg/kg | 62 | 1.1 | <0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 250 | 4.5 | <0.1 | 0.5 | <0.1 |
| Pyrene | mg/kg | 210 | 4.1 | <0.1 | 0.5 | <0.1 |
| Benzo(a)anthracene | mg/kg | 80 | 1.6 | <0.1 | 0.2 | <0.1 |
| Chrysene | mg/kg | 63 | 1.5 | <0.1 | 0.2 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 94 | 2.8 | <0.2 | 0.3 | <0.2 |
| Benzo(a)pyrene | mg/kg | 47 | 1.9 | <0.05 | 0.2 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 29 | 1.1 | <0.1 | 0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | 7.3 | 0.2 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 33 | 1.3 | <0.1 | 0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 75 | 2.7 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 75 | 2.7 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 75 | 2.7 | <0.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 1,200 | 24 | <0.05 | 2.2 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 76 | 79 | 76 | 80 | 71 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-12<br>125<br><br>0.5<br>16/12/2016<br>soil | 159472-13<br>125<br><br>1.5<br>16/12/2016<br>soil | 159472-14<br>126<br><br>0.5<br>15/12/2016<br>soil | 159472-15<br>126<br><br>1.8<br>15/12/2016<br>soil | 159472-16<br>127<br><br>0.6<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | <0.1 | <0.1 | <0.1 | 0.2 | 1.6 |
| Anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 0.4 |
| Fluoranthene | mg/kg | <0.1 | <0.1 | <0.1 | 0.2 | 4.2 |
| Pyrene | mg/kg | <0.1 | <0.1 | <0.1 | 0.2 | 3.9 |
| Benzo(a)anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 1.7 |
| Chrysene | mg/kg | <0.1 | <0.1 | <0.1 | 0.1 | 1.7 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | <0.2 | <0.2 | <0.2 | 3.1 |
| Benzo(a)pyrene | mg/kg | <0.05 | <0.05 | <0.05 | 0.09 | 1.7 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 1.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 1.4 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 2.6 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 2.6 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 2.6 |
| Total +ve PAH's | mg/kg | <0.05 | <0.05 | <0.05 | 0.85 | 21 |
| *Surrogate p*-Terphenyl-d14 | % | 83 | 75 | 75 | 69 | 79 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-17<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-18<br>127<br><br>2.7<br>16/12/2016<br>soil | 159472-21<br>128<br><br>0.3<br>16/12/2016<br>soil | 159472-22<br>128<br><br>0.6<br>16/12/2016<br>soil | 159472-23<br>128<br><br>1.5<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | <0.1 | 0.5 | <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 | 3.4 | <0.1 | <0.1 |
| Anthracene | mg/kg | <0.1 | <0.1 | 0.9 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 0.1 | <0.1 | 7.3 | <0.1 | 0.1 |
| Pyrene | mg/kg | 0.1 | <0.1 | 7.3 | <0.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | <0.1 | <0.1 | 2.8 | <0.1 | <0.1 |
| Chrysene | mg/kg | <0.1 | <0.1 | 2.3 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | <0.2 | 5.1 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.05 | <0.05 | 3.0 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | <0.1 | 2.0 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | 0.4 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | <0.1 | 2.7 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | <0.5 | 4.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | <0.5 | 4.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | <0.5 | 4.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 0.3 | <0.05 | 38 | <0.05 | 0.1 |
| *Surrogate p*-Terphenyl-d14 | % | 82 | 68 | 84 | 83 | 80 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-26<br>D7<br><br>-<br>16/12/2016<br>soil | 159472-27<br>D6<br><br>-<br>16/12/2016<br>soil |
|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 |
| Phenanthrene | mg/kg | 0.3 | <0.1 |
| Anthracene | mg/kg | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 1.2 | <0.1 |
| Pyrene | mg/kg | 1.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | 0.4 | <0.1 |
| Chrysene | mg/kg | 0.5 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.8 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.5 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.3 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.4 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.6 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.6 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.6 | <0.5 |
| Total +ve PAH's | mg/kg | 5.7 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 79 | 80 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-5 | 159472-7 | 159472-9 |
| Your Reference | ---------- - | 119 | 119 | 120 | 122 | 122 |
| Depth | ---------- | 0.3 | 0.7 | 0.3 | 0.3 | 1.4 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 124 | 124 | 122 | 112 | 121 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-10 | 159472-12 | 159472-14 | 159472-16 | 159472-18 |
| Your Reference | ---------- - | 124 | 125 | 126 | 127 | 127 |
| Depth | ---------- | 0.6 | 0.5 | 0.5 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 123 | 123 | 121 | 125 | 117 |

| Organochlorine Pesticides in soil | | |
|---|---|---|
| Our Reference: | UNITS | 159472-21 |
| Your Reference | ---------- - | 128 |
| Depth | ---------- | 0.3 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 20/12/2016 |
| Date analysed | - | 21/12/2016 |
| HCB | mg/kg | <0.1 |
| alpha-BHC | mg/kg | <0.1 |
| gamma-BHC | mg/kg | <0.1 |
| beta-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 |
| pp-DDD | mg/kg | <0.1 |
| Endosulfan II | mg/kg | <0.1 |
| pp-DDT | mg/kg | <0.1 |
| Endrin Aldehyde | 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 | % | 113 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-1<br>119<br><br>0.3<br>16/12/2016<br>soil | 159472-2<br>119<br><br>0.7<br>16/12/2016<br>soil | 159472-5<br>120<br><br>0.3<br>16/12/2016<br>soil | 159472-7<br>122<br><br>0.3<br>16/12/2016<br>soil | 159472-9<br>122<br><br>1.4<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 124 | 124 | 122 | 112 | 121 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-10<br>124<br><br>0.6<br>16/12/2016<br>soil | 159472-12<br>125<br><br>0.5<br>16/12/2016<br>soil | 159472-14<br>126<br><br>0.5<br>15/12/2016<br>soil | 159472-16<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-18<br>127<br><br>2.7<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 123 | 123 | 121 | 125 | 117 |

| Organophosphorus Pesticides | | |
|---|---|---|
| Our Reference: | UNITS | 159472-21 |
| Your Reference | ---------- | 128 |
| | - | |
| Depth | ---------- | 0.3 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 20/12/2016 |
| Date analysed | - | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 |
| Diazinon | mg/kg | <0.1 |
| Dichlorvos | mg/kg | <0.1 |
| Dimethoate | mg/kg | <0.1 |
| Ethion | mg/kg | <0.1 |
| Fenitrothion | mg/kg | <0.1 |
| Malathion | mg/kg | <0.1 |
| Parathion | mg/kg | <0.1 |
| Ronnel | mg/kg | <0.1 |
| *Surrogate* TCMX | % | 113 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-5 | 159472-7 | 159472-9 |
| Your Reference | ---------- | 119 | 119 | 120 | 122 | 122 |
| Depth | ---------- | 0.3 | 0.7 | 0.3 | 0.3 | 1.4 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| 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* TCLMX | % | 124 | 124 | 122 | 112 | 121 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-10 | 159472-12 | 159472-14 | 159472-16 | 159472-18 |
| Your Reference | ---------- | 124 | 125 | 126 | 127 | 127 |
| Depth | ---------- | 0.6 | 0.5 | 0.5 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| 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* TCLMX | % | 123 | 123 | 121 | 125 | 117 |

| PCBs in Soil | | |
|---|---|---|
| Our Reference: | UNITS | 159472-21 |
| Your Reference | ---------- | 128 |
| | - | |
| Depth | ---------- | 0.3 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 20/12/2016 |
| Date analysed | - | 21/12/2016 |
| 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* TCLMX | % | 113 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-3 | 159472-5 | 159472-6 |
| Your Reference | ---------- | 119 | 119 | 119 | 120 | 120 |
| Depth | ---------- | 0.3 | 0.7 | 2.4 | 0.3 | 2.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 17 | <4 | <4 | <4 | <4 |
| Cadmium | mg/kg | 2 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 14 | 1 | 1 | 3 | 1 |
| Copper | mg/kg | 160 | <1 | <1 | 5 | <1 |
| Lead | mg/kg | 180 | 1 | <1 | 4 | <1 |
| Mercury | mg/kg | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 11 | <1 | <1 | 2 | <1 |
| Zinc | mg/kg | 310 | 3 | 1 | 24 | 2 |
| Manganese | mg/kg | 460 | 29 | 6 | 46 | 7 |
| Iron | mg/kg | 17,000 | 1,200 | 1,100 | 2,300 | 1,100 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-7 | 159472-8 | 159472-9 | 159472-10 | 159472-11 |
| Your Reference | ---------- | 122 | 122 | 122 | 124 | 124 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 16 | 5 | <4 | <4 | <4 |
| Cadmium | mg/kg | 7.3 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 46 | 2 | 1 | 2 | 1 |
| Copper | mg/kg | 310 | 4 | <1 | 11 | 2 |
| Lead | mg/kg | 510 | 8 | 1 | 12 | 3 |
| Mercury | mg/kg | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 17 | <1 | <1 | 2 | <1 |
| Zinc | mg/kg | 2,600 | 75 | 3 | 43 | 7 |
| Manganese | mg/kg | 1,400 | 39 | 12 | 33 | 17 |
| Iron | mg/kg | 33,000 | 1,500 | 1,100 | 1,800 | 1,500 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-12 | 159472-13 | 159472-14 | 159472-15 | 159472-16 |
| Your Reference | ---------- | 125 | 125 | 126 | 126 | 127 |
| Depth | - ---------- | 0.5 | 1.5 | 0.5 | 1.8 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 15/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 4 | 5 | <4 | 4 | 6 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | 0.8 |
| Chromium | mg/kg | 1 | 1 | 1 | 8 | 96 |
| Copper | mg/kg | 1 | <1 | <1 | 180 | 18 |
| Lead | mg/kg | 1 | 1 | 1 | 9 | 43 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | <1 | <1 | <1 | 7 | 6 |
| Zinc | mg/kg | 3 | 3 | 2 | 45 | 380 |
| Manganese | mg/kg | 13 | 16 | 10 | 110 | 220 |
| Iron | mg/kg | 1,300 | 1,400 | 1,400 | 6,600 | 8,700 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-17 | 159472-18 | 159472-21 | 159472-22 | 159472-23 |
| Your Reference | ---------- | 127 | 127 | 128 | 128 | 128 |
| Depth | - ---------- | 0.6 | 2.7 | 0.3 | 0.6 | 1.5 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | <4 | <4 | 7 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | 0.9 | <0.4 | <0.4 |
| Chromium | mg/kg | 2 | 1 | 9 | 2 | 1 |
| Copper | mg/kg | 2 | <1 | 83 | 2 | <1 |
| Lead | mg/kg | 1 | <1 | 100 | 1 | 1 |
| Mercury | mg/kg | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | <1 | <1 | 8 | <1 | <1 |
| Zinc | mg/kg | 6 | 1 | 260 | 3 | 3 |
| Manganese | mg/kg | 11 | 7 | 270 | 18 | 11 |
| Iron | mg/kg | 1,200 | 1,000 | 10,000 | 1,400 | 1,300 |

| Acid Extractable metals in soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159472-26 | 159472-27 |
| Your Reference | ---------- | D7 | D6 |
| | - | | |
| Depth | ---------- | - | - |
| Date Sampled | | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 20/12/2016 | 20/12/2016 |
| Arsenic | mg/kg | 5 | 4 |
| Cadmium | mg/kg | <0.4 | <0.4 |
| Chromium | mg/kg | 2 | 2 |
| Copper | mg/kg | 6 | 1 |
| Lead | mg/kg | 12 | 1 |
| Mercury | mg/kg | <0.1 | <0.1 |
| Nickel | mg/kg | 1 | 1 |
| Zinc | mg/kg | 110 | 4 |
| Manganese | mg/kg | 50 | 18 |
| Iron | mg/kg | 1,800 | 1,500 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-3 | 159472-4 | 159472-5 |
| Your Reference | ---------- | 119 | 119 | 119 | 119 | 120 |
| | - | | | | | |
| Depth | ---------- | 0.3 | 0.7 | 2.4 | 0.4 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | Material | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 8.4 | 9.4 | 9.4 | [NA] | 9.4 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 150 | 42 | 38 | [NA] | 70 |
| Presence of Coal Tar* | - | [NA] | [NA] | [NA] | Absent | [NA] |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-6 | 159472-7 | 159472-8 | 159472-9 | 159472-10 |
| Your Reference | ---------- | 120 | 122 | 122 | 122 | 124 |
| | - | | | | | |
| Depth | ---------- | 2.3 | 0.3 | 0.6 | 1.4 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.4 | 8.9 | 9.1 | 9.3 | 9.1 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 46 | 130 | 44 | 47 | 63 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-11 | 159472-12 | 159472-13 | 159472-14 | 159472-15 |
| Your Reference | ---------- | 124 | 125 | 125 | 126 | 126 |
| | - | | | | | |
| Depth | ---------- | 2.7 | 0.5 | 1.5 | 0.5 | 1.8 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 15/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.4 | 9.3 | 9.3 | 9.5 | 9.0 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 49 | 55 | 56 | 43 | 88 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-16 | 159472-17 | 159472-18 | 159472-21 | 159472-22 |
| Your Reference | ---------- | 127 | 127 | 127 | 128 | 128 |
| | - | | | | | |
| Depth | ---------- | 0.6 | 0.6 | 2.7 | 0.3 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 8.9 | 9.4 | 9.2 | 8.0 | 9.2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 67 | 43 | 83 | 150 | 68 |

| Misc Inorg - Soil | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-23 | 159472-26 | 159472-27 | 159472-28 |
| Your Reference | ---------- - | 128 | D7 | D6 | 132 |
| Depth | ---------- | 1.5 | - | - | 0.45 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 15/12/2016 |
| Type of sample | | soil | soil | soil | Material |
| Date prepared | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | 9.4 | 9.1 | 9.3 | [NA] |
| Electrical Conductivity 1:5 soil:water | µS/cm | 49 | 51 | 56 | [NA] |
| Presence of Coal Tar* | - | [NA] | [NA] | [NA] | Absent |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-1 | 159472-2 | 159472-3 | 159472-5 | 159472-6 |
| Your Reference | ---------- - | 119 | 119 | 119 | 120 | 120 |
| Depth | ---------- | 0.3 | 0.7 | 2.4 | 0.3 | 2.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 7.2 | 4.0 | 11 | 5.5 | 18 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-7 | 159472-8 | 159472-9 | 159472-10 | 159472-11 |
| Your Reference | ---------- - | 122 | 122 | 122 | 124 | 124 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 2.7 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 13 | 1.6 | 5.5 | 1.9 | 13 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-12 | 159472-13 | 159472-14 | 159472-15 | 159472-16 |
| Your Reference | ---------- - | 125 | 125 | 126 | 126 | 127 |
| Depth | ---------- | 0.5 | 1.5 | 0.5 | 1.8 | 0.6 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 15/12/2016 | 15/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 1.3 | 4.4 | 4.7 | 15 | 3.9 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-17 | 159472-18 | 159472-21 | 159472-22 | 159472-23 |
| Your Reference | ---------- - | 127 | 127 | 128 | 128 | 128 |
| Depth | ---------- | 0.6 | 2.7 | 0.3 | 0.6 | 1.5 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Moisture | % | 1.5 | 17 | 7.6 | 3.0 | 2.9 |

| Moisture | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159472-26 | 159472-27 |
| Your Reference | ---------- | D7 | D6 |
| | - | | |
| Depth | ---------- | - | - |
| Date Sampled | | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil |
| Date prepared | - | 20/12/2016 | 20/12/2016 |
| Date analysed | - | 21/12/2016 | 21/12/2016 |
| Moisture | % | 2.4 | 1.7 |

| Asbestos ID - soils NEPM<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-19<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-24<br>128<br><br>0.3<br>16/12/2016<br>soil |
|---|---|---|---|
| Date analysed | - | 29/12/2016 | 29/12/2016 |
| Sample mass tested | g | 752.72 | 679.87 |
| Sample Description | - | Brown sandy soil & rocks | Brown sandy soil & rocks |
| Asbestos ID in soil (AS4964) >0.1g/kg | - | No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected | No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected |
| Trace Analysis | - | No asbestos detected | No asbestos detected |
| Total Asbestos[#1] | g/kg | <0.1 | <0.1 |
| Asbestos ID in soil <0.1g/kg* | - | No visible asbestos detected | No visible asbestos detected |
| ACM >7mm Estimation* | g | – | – |
| FA and AF Estimation* | g | – | – |
| FA and AF Estimation*[#2] | %(w/w) | <0.001 | <0.001 |

| Asbestos ID - materials | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159472-20 | 159472-25 |
| Your Reference | ---------- | 127 | 128 |
| | - | | |
| Depth | ---------- | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 |
| Type of sample | | Material | Material |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| Mass / Dimension of Sample | - | 20x15x3mm | 50x45x5mm |
| Sample Description | - | Grey pebbly cement | Grey compressed fibre cement material |
| Asbestos ID in materials | - | No asbestos detected | Chrysotile asbestos detected |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes. |
| Org-014 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>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.<br><br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'TEQ 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.<br>2. 'TEQ 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.<br>3. 'TEQ 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.<br>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-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>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-008 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>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. |

| Method ID | Methodology Summary |
|---|---|
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| RTA T542 | Determination of Phenol in core samples as per RTA test method T542. This procedure gives and indication of whether a sample of asphalt has been made with coal tar. The coal tar method gives an approximate result with a high degree of uncertainty. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours. |
| 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.<br>Results reported denoted with * are outside our scope of NATA accreditation.<br><br>**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)<br><br>**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.<br><br>Estimation = Estimated asbestos weight<br><br>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques. |
| 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. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 25 | Org-016 | <25 | 159472-1 | <25 \|\| <25 | LCS-5 | 106% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 25 | Org-016 | <25 | 159472-1 | <25 \|\| <25 | LCS-5 | 106% |
| Benzene | mg/kg | 0.2 | Org-016 | <0.2 | 159472-1 | <0.2 \|\| <0.2 | LCS-5 | 115% |
| Toluene | mg/kg | 0.5 | Org-016 | <0.5 | 159472-1 | <0.5 \|\| <0.5 | LCS-5 | 103% |
| Ethylbenzene | mg/kg | 1 | Org-016 | <1 | 159472-1 | <1 \|\| <1 | LCS-5 | 104% |
| m+p-xylene | mg/kg | 2 | Org-016 | <2 | 159472-1 | <2 \|\| <2 | LCS-5 | 104% |
| o-Xylene | mg/kg | 1 | Org-016 | <1 | 159472-1 | <1 \|\| <1 | LCS-5 | 103% |
| naphthalene | mg/kg | 1 | Org-014 | <1 | 159472-1 | <1 \|\| <1 | LCS-5 | [NT] |
| *Surrogate* aaa-Trifluorotoluene | % | | Org-016 | 93 | 159472-1 | 87 \|\| 86 \|\| RPD: 1 | LCS-5 | 91% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159472-1 | 22/12/2016 \|\| 22/12/2016 | LCS-6 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 50 | Org-003 | <50 | 159472-1 | <50 \|\| <50 | LCS-6 | 112% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 100 | Org-003 | <100 | 159472-1 | <100 \|\| <100 | LCS-6 | 104% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 100 | Org-003 | <100 | 159472-1 | <100 \|\| <100 | LCS-6 | 106% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 50 | Org-003 | <50 | 159472-1 | <50 \|\| <50 | LCS-6 | 112% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 100 | Org-003 | <100 | 159472-1 | <100 \|\| <100 | LCS-6 | 104% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 100 | Org-003 | <100 | 159472-1 | <100 \|\| <100 | LCS-6 | 106% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 90 | 159472-1 | 87 \|\| 88 \|\| RPD: 1 | LCS-6 | 96% |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| Naphthalene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 108% |
| Acenaphthylene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 0.2 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 109% |
| Phenanthrene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 1.3 \|\| 1.2 \|\| RPD: 8 | LCS-6 | 104% |
| Anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 0.3 \|\| 0.4 \|\| RPD: 29 | [NR] | [NR] |
| Fluoranthene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 3.9 \|\| 4.3 \|\| RPD: 10 | LCS-6 | 103% |
| Pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 3.9 \|\| 4.2 \|\| RPD: 7 | LCS-6 | 108% |
| Benzo(a)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 1.6 \|\| 1.6 \|\| RPD: 0 | [NR] | [NR] |
| Chrysene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 1.5 \|\| 1.6 \|\| RPD: 6 | [NR] | [NR] |
| Benzo(b,j+k) fluoranthene | mg/kg | 0.2 | Org-012 | <0.2 | 159472-1 | 2.9 \|\| 2.9 \|\| RPD: 0 | [NR] | [NR] |

| QUALITY CONTROL<br><br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 0.05 | Org-012 | <0.05 | 159472-1 | 1.6 \|\| 1.8 \|\| RPD: 12 | LCS-6 | 111% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 0.9 \|\| 1.3 \|\| RPD: 36 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 0.2 \|\| 0.2 \|\| RPD: 0 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | Org-012 | <0.1 | 159472-1 | 1.2 \|\| 1.2 \|\| RPD: 0 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 86 | 159472-1 | 73 \|\| 85 \|\| RPD: 15 | LCS-6 | 101% |

| QUALITY CONTROL<br><br>Organochlorine Pesticides in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| HCB | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 104% |
| gamma-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 93% |
| delta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 105% |
| Heptachlor Epoxide | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 110% |
| gamma-Chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 124% |
| Dieldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 123% |
| Endrin | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 99% |
| pp-DDD | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 123% |
| Endosulfan II | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 110% |
| Methoxychlor | mg/kg | 0.1 | Org-005 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | | Org-005 | 126 | 159472-1 | 124 \|\| 123 \|\| RPD: 1 | LCS-6 | 114% |

| QUALITY CONTROL<br><br>Organophosphorus Pesticides | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 91% |
| Chlorpyriphos-methyl | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 83% |
| Dimethoate | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 78% |
| Fenitrothion | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 82% |
| Malathion | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 78% |
| Parathion | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 83% |
| Ronnel | mg/kg | 0.1 | Org-008 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-6 | 91% |
| *Surrogate* TCMX | % | | Org-008 | 126 | 159472-1 | 124 \|\| 123 \|\| RPD: 1 | LCS-6 | 122% |

| QUALITY CONTROL<br><br>PCBs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 | LCS-5 | 20/12/2016 |
| Date analysed | - | | | 21/12/2016 | 159472-1 | 21/12/2016 \|\| 21/12/2016 | LCS-5 | 21/12/2016 |
| Aroclor 1016 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | LCS-5 | 88% |
| Aroclor 1260 | mg/kg | 0.1 | Org-006 | <0.1 | 159472-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | | Org-006 | 126 | 159472-1 | 124 \|\| 123 \|\| RPD: 1 | LCS-5 | 122% |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD |
|---|---|---|---|---|---|---|
| Date prepared | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 |
| Date analysed | - | | | 20/12/2016 | 159472-1 | 20/12/2016 \|\| 20/12/2016 |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | 159472-1 | 17 \|\| 13 \|\| RPD: 27 |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | 159472-1 | 2 \|\| 1 \|\| RPD: 67 |
| Chromium | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 14 \|\| 16 \|\| RPD: 13 |
| Copper | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 160 \|\| 160 \|\| RPD: 0 |
| Lead | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 180 \|\| 200 \|\| RPD: 11 |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | 159472-1 | 0.1 \|\| 0.1 \|\| RPD: 0 |
| Nickel | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 11 \|\| 13 \|\| RPD: 17 |
| Zinc | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 310 \|\| 280 \|\| RPD: 10 |
| Manganese | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 460 \|\| 510 \|\| RPD: 10 |
| Iron | mg/kg | 1 | Metals-020 | <1 | 159472-1 | 17000 \|\| 19000 \|\| RPD: 11 |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD |
|---|---|---|---|---|---|---|
| Date prepared | - | | | 23/12/2016 | 159472-1 | 23/12/2016 \|\| 23/12/2016 |
| Date analysed | - | | | 23/12/2016 | 159472-1 | 23/12/2016 \|\| 23/12/2016 |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 159472-1 | 8.4 \|\| 8.6 \|\| RPD: 2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | 159472-1 | 150 \|\| 170 \|\| RPD: 12 |
| Presence of Coal Tar* | - | | RTA T542 | Absent | [NT] | [NT] |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159472-12 | <25 \|\| <25 | 159472-2 | 101% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159472-12 | <25 \|\| <25 | 159472-2 | 101% |
| Benzene | mg/kg | 159472-12 | <0.2 \|\| <0.2 | 159472-2 | 108% |
| Toluene | mg/kg | 159472-12 | <0.5 \|\| <0.5 | 159472-2 | 97% |
| Ethylbenzene | mg/kg | 159472-12 | <1 \|\| <1 | 159472-2 | 99% |
| m+p-xylene | mg/kg | 159472-12 | <2 \|\| <2 | 159472-2 | 101% |
| o-Xylene | mg/kg | 159472-12 | <1 \|\| <1 | 159472-2 | 99% |
| naphthalene | mg/kg | 159472-12 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159472-12 | 92 \|\| 91 \|\| RPD: 1 | 159472-2 | 87% |

| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 22/12/2016 \|\| 22/12/2016 | 159472-2 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159472-12 | <50 \|\| <50 | 159472-2 | 108% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159472-12 | <100 \|\| <100 | 159472-2 | 107% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159472-12 | <100 \|\| <100 | 159472-2 | 101% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159472-12 | <50 \|\| <50 | 159472-2 | 108% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159472-12 | <100 \|\| <100 | 159472-2 | 107% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159472-12 | <100 \|\| <100 | 159472-2 | 101% |
| *Surrogate* o-Terphenyl | % | 159472-12 | 91 \|\| 92 \|\| RPD: 1 | 159472-2 | 90% |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| Date analysed | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| Naphthalene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 105% |
| Acenaphthylene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 101% |
| Phenanthrene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 94% |
| Anthracene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 90% |
| Pyrene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 98% |
| Benzo(a)anthracene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chrysene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159472-12 | <0.2 \|\| <0.2 | [NR] | [NR] |
| Benzo(a)pyrene | mg/kg | 159472-12 | <0.05 \|\| <0.05 | 159472-2 | 96% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159472-12 | 83 \|\| 85 \|\| RPD: 2 | 159472-2 | 97% |

| QUALITY CONTROL Organochlorine Pesticides in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| HCB | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 105% |
| gamma-BHC | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 100% |
| delta-BHC | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 112% |
| Heptachlor Epoxide | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 116% |
| gamma-Chlordane | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 105% |
| Dieldrin | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 125% |
| Endrin | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 99% |
| pp-DDD | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 113% |
| Endosulfan II | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 88% |
| Methoxychlor | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | 159472-12 | 123 \|\| 126 \|\| RPD: 2 | 159472-2 | 131% |

| QUALITY CONTROL Organophosphorus Pesticides | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 93% |
| Chlorpyriphos-methyl | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 69% |
| Dimethoate | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 85% |
| Fenitrothion | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 81% |
| Malathion | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 68% |
| Parathion | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 87% |
| Ronnel | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 91% |
| *Surrogate* TCMX | % | 159472-12 | 123 \|\| 126 \|\| RPD: 2 | 159472-2 | 104% |
| QUALITY CONTROL PCBs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 21/12/2016 \|\| 21/12/2016 | 159472-2 | 21/12/2016 |
| Aroclor 1016 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 105% |
| Aroclor 1260 | mg/kg | 159472-12 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | 159472-12 | 123 \|\| 126 \|\| RPD: 2 | 159472-2 | 104% |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Date analysed | - | 159472-12 | 20/12/2016 \|\| 20/12/2016 | 159472-2 | 20/12/2016 |
| Arsenic | mg/kg | 159472-12 | 4 \|\| 4 \|\| RPD: 0 | 159472-2 | 110% |
| Cadmium | mg/kg | 159472-12 | <0.4 \|\| <0.4 | 159472-2 | 109% |
| Chromium | mg/kg | 159472-12 | 1 \|\| 1 \|\| RPD: 0 | 159472-2 | 112% |
| Copper | mg/kg | 159472-12 | 1 \|\| 1 \|\| RPD: 0 | 159472-2 | 117% |
| Lead | mg/kg | 159472-12 | 1 \|\| 1 \|\| RPD: 0 | 159472-2 | 110% |
| Mercury | mg/kg | 159472-12 | <0.1 \|\| <0.1 | 159472-2 | 94% |
| Nickel | mg/kg | 159472-12 | <1 \|\| <1 | 159472-2 | 107% |
| Zinc | mg/kg | 159472-12 | 3 \|\| 3 \|\| RPD: 0 | 159472-2 | 117% |
| Manganese | mg/kg | 159472-12 | 13 \|\| 13 \|\| RPD: 0 | 159472-2 | 91% |

| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Iron | mg/kg | 159472-12 | 1300 \|\| 1300 \|\| RPD: 0 | 159472-2 | # |
| QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159472-23 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | 159472-23 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159472-23 | <25 \|\| <25 | LCS-6 | 110% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159472-23 | <25 \|\| <25 | LCS-6 | 110% |
| Benzene | mg/kg | 159472-23 | <0.2 \|\| <0.2 | LCS-6 | 118% |
| Toluene | mg/kg | 159472-23 | <0.5 \|\| <0.5 | LCS-6 | 106% |
| Ethylbenzene | mg/kg | 159472-23 | <1 \|\| <1 | LCS-6 | 107% |
| m+p-xylene | mg/kg | 159472-23 | <2 \|\| <2 | LCS-6 | 110% |
| o-Xylene | mg/kg | 159472-23 | <1 \|\| <1 | LCS-6 | 109% |
| naphthalene | mg/kg | 159472-23 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159472-23 | 91 \|\| 91 \|\| RPD: 0 | LCS-6 | 92% |
| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159472-23 | 20/12/2016 \|\| 20/12/2016 | LCS-6 | 20/12/2016 |
| Date analysed | - | 159472-23 | 22/12/2016 \|\| 22/12/2016 | LCS-6 | 22/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159472-23 | <50 \|\| <50 | LCS-6 | 107% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159472-23 | <100 \|\| <100 | LCS-6 | 104% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159472-23 | <100 \|\| <100 | LCS-6 | 105% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159472-23 | <50 \|\| <50 | LCS-6 | 107% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159472-23 | <100 \|\| <100 | LCS-6 | 104% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159472-23 | <100 \|\| <100 | LCS-6 | 105% |
| *Surrogate* o-Terphenyl | % | 159472-23 | 90 \|\| 89 \|\| RPD: 1 | LCS-6 | 93% |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159472-23 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| Date analysed | - | 159472-23 | 21/12/2016 \|\| 21/12/2016 | LCS-6 | 21/12/2016 |
| Naphthalene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | LCS-6 | 103% |
| Acenaphthylene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | LCS-6 | 100% |
| Phenanthrene | mg/kg | 159472-23 | <0.1 \|\| 0.1 | LCS-6 | 96% |
| Anthracene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159472-23 | 0.1 \|\| 0.2 \|\| RPD: 67 | LCS-6 | 89% |
| Pyrene | mg/kg | 159472-23 | <0.1 \|\| 0.2 | LCS-6 | 86% |
| Benzo(a)anthracene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chrysene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159472-23 | <0.2 \|\| <0.2 | [NR] | [NR] |

| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 159472-23 | <0.05 \|\| 0.06 | LCS-6 | 94% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159472-23 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159472-23 | 80 \|\| 81 \|\| RPD: 1 | LCS-6 | 102% |

| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159472-23 | 20/12/2016 \|\| 20/12/2016 |
| Date analysed | - | 159472-23 | 20/12/2016 \|\| 20/12/2016 |
| Arsenic | mg/kg | 159472-23 | <4 \|\| <4 |
| Cadmium | mg/kg | 159472-23 | <0.4 \|\| <0.4 |
| Chromium | mg/kg | 159472-23 | 1 \|\| 1 \|\| RPD: 0 |
| Copper | mg/kg | 159472-23 | <1 \|\| <1 |
| Lead | mg/kg | 159472-23 | 1 \|\| 1 \|\| RPD: 0 |
| Mercury | mg/kg | 159472-23 | <0.1 \|\| <0.1 |
| Nickel | mg/kg | 159472-23 | <1 \|\| <1 |
| Zinc | mg/kg | 159472-23 | 3 \|\| 2 \|\| RPD: 40 |
| Manganese | mg/kg | 159472-23 | 11 \|\| 11 \|\| RPD: 0 |
| Iron | mg/kg | 159472-23 | 1300 \|\| 1400 \|\| RPD: 7 |

| QUALITY CONTROL Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | [NT] | [NT] | LCS-1 | 23/12/2016 |
| Date analysed | - | [NT] | [NT] | LCS-1 | 23/12/2016 |
| pH 1:5 soil:water | pH Units | [NT] | [NT] | LCS-1 | 102% |
| Electrical Conductivity 1:5 soil:water | µS/cm | [NT] | [NT] | LCS-1 | 105% |
| Presence of Coal Tar* | - | [NT] | [NT] | LCS-1 | Present |

| QUALITY CONTROL Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159472-11 | 23/12/2016 \|\| 23/12/2016 |
| Date analysed | - | 159472-11 | 23/12/2016 \|\| 23/12/2016 |
| pH 1:5 soil:water | pH Units | 159472-11 | 9.4 \|\| 9.3 \|\| RPD: 1 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159472-11 | 49 \|\| 52 \|\| RPD: 6 |
| Presence of Coal Tar* | - | [NT] | [NT] |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159472-21 | 23/12/2016 \|\| 23/12/2016 |
| Date analysed | - | 159472-21 | 23/12/2016 \|\| 23/12/2016 |
| pH 1:5 soil:water | pH Units | 159472-21 | 8.0 \|\| 8.2 \|\| RPD: 2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159472-21 | 150 \|\| 170 \|\| RPD: 12 |
| Presence of Coal Tar* | - | [NT] | [NT] |

**Report Comments:**

Acid Extractable Metals in Soil: # Percent recovery is not possible to report due to the high concentration of the element/s in the s
obtained for the LCS.

s TRH in soil:
# Percent recovery is not possible to report as the high concentration of analytes in the sample/s
have caused interference.

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.

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Paul Ching |
| Asbestos ID was authorised by Approved Signatory: | Paul Ching |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159472-A

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | |
|---|---|
| Your Reference: | **91034, Newcastle** |
| No. of samples: | Additional testing |
| Date samples received / completed instructions received | 20/12/16 / 03/01/17 |

**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: / Issue Date: | 10/01/17 / 10/01/17 |
| Date of Preliminary Report: | Not Issued |

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

**Results Approved By:**

David Springer
General Manager

| Metals in TCLP USEPA1311 | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-A-1 | 159472-A-7 | 159472-A-8 | 159472-A-17 | 159472-A-21 |
| Your Reference | ---------- | 119 | 122 | 122 | 127 | 128 |
| | - | | | | | |
| Depth | ---------- | 0.3 | 0.3 | 0.6 | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 06/01/2017 | 06/01/2017 | 04/01/2017 | 04/01/2017 | 06/01/2017 |
| Date analysed | - | 06/01/2017 | 06/01/2017 | 05/01/2017 | 05/01/2017 | 06/01/2017 |
| pH of soil for fluid# determ. | pH units | 8.8 | 8.7 | 8.2 | 9.1 | 7.9 |
| pH of soil TCLP (after HCl) | pH units | 1.6 | 1.6 | 1.5 | 1.5 | 1.6 |
| Extraction fluid used | - | 1 | 1 | 1 | 1 | 1 |
| pH of final Leachate | pH units | 6.3 | 5.4 | 5.5 | 7.1 | 5.4 |
| Lead in TCLP | mg/L | <0.03 | 0.2 | [NA] | [NA] | <0.03 |

| PAHs in TCLP (USEPA 1311) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-A-1 | 159472-A-7 | 159472-A-8 | 159472-A-17 | 159472-A-21 |
| Your Reference | ---------- - | 119 | 122 | 122 | 127 | 128 |
| Depth | ---------- | 0.3 | 0.3 | 0.6 | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Naphthalene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Acenaphthylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Acenaphthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Fluorene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Phenanthrene in TCLP | mg/L | <0.001 | 0.001 | 0.001 | 0.001 | <0.001 |
| Anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Fluoranthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(a)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Chrysene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(bjk)fluoranthene in TCLP | mg/L | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Benzo(a)pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Indeno(1,2,3-c,d)pyrene - TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Dibenzo(a,h)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(g,h,i)perylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total +ve PAH's | mg/L | NIL (+)VE | 0.001 | 0.001 | 0.001 | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 91 | 80 | 96 | 106 | 89 |

| Metals-ASLP Neutral (ICP-MS) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-A-7 | 159472-A-8 | 159472-A-9 | 159472-A-17 | 159472-A-21 |
| Your Reference | ---------- - | 122 | 122 | 122 | 127 | 128 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 8.2 | 7.8 | 7.7 | 7.9 | 8.0 |
| Arsenic in ASLP | µg/L | 9 | 7 | 3 | 3 | 4 |
| Cadmium in ASLP | µg/L | 1.8 | 0.1 | <0.1 | <0.1 | 0.2 |
| Chromium in ASLP | µg/L | 8 | 1 | 2 | 3 | 2 |
| Copper in ASLP | µg/L | 78 | 4 | 1 | 5 | 18 |
| Lead in ASLP | µg/L | 110 | 4 | 1 | 3 | 39 |
| Mercury in ASLP | µg/L | 0.08 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel in ASLP | µg/L | 4 | <1 | 1 | 1 | 1 |
| Zinc in ASLP | µg/L | 240 | 55 | 3 | 14 | 48 |
| Manganese in ASLP | µg/L | 93 | 30 | 10 | 10 | 30 |
| Beryllium in ASLP | µg/L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron in ASLP | µg/L | 75 | <20 | <20 | <20 | 69 |
| Molybdenum in ASLP | µg/L | 3 | <1 | <1 | <1 | 2 |
| Selenium in ASLP | µg/L | <1 | <1 | <1 | <1 | <1 |

| Metals-ASLP Neutral (ICP-MS) | | |
|---|---|---|
| Our Reference: | UNITS | 159472-A-22 |
| Your Reference | ---------- - | 128 |
| Depth | ---------- | 0.6 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 04/01/2017 |
| Date analysed | - | 09/01/2017 |
| pH of final Leachate | pH units | 8.2 |
| Arsenic in ASLP | µg/L | 3 |
| Cadmium in ASLP | µg/L | <0.1 |
| Chromium in ASLP | µg/L | 2 |
| Copper in ASLP | µg/L | 1 |
| Lead in ASLP | µg/L | 1 |
| Mercury in ASLP | µg/L | <0.05 |
| Nickel in ASLP | µg/L | 1 |
| Zinc in ASLP | µg/L | 3 |
| Manganese in ASLP | µg/L | 20 |
| Beryllium in ASLP | µg/L | <0.5 |
| Boron in ASLP | µg/L | <20 |
| Molybdenum in ASLP | µg/L | <1 |
| Selenium in ASLP | µg/L | <1 |

| sTRH in water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-A-7<br>122<br><br>0.3<br>16/12/2016<br>soil | 159472-A-8<br>122<br><br>0.6<br>16/12/2016<br>soil | 159472-A-9<br>122<br><br>1.4<br>16/12/2016<br>soil | 159472-A-17<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-A-21<br>128<br><br>0.3<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | 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 | % | 115 | 120 | 108 | 110 | 115 |

| sTRH in water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-A-22<br>128<br><br>0.6<br>16/12/2016<br>soil |
|---|---|---|
| Date extracted | - | 05/01/2017 |
| Date analysed | - | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 |
| *Surrogate* o-Terphenyl | % | 103 |

| PAHs - ASLP Trace Level<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-A-7<br>122<br><br>0.3<br>16/12/2016<br>soil | 159472-A-8<br>122<br><br>0.6<br>16/12/2016<br>soil | 159472-A-9<br>122<br><br>1.4<br>16/12/2016<br>soil | 159472-A-17<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-A-21<br>128<br><br>0.3<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.04 | 0.07 | 0.08 | 0.1 | <0.02 |
| Acenaphthylene | µg/L | <0.01 | 0.02 | 0.03 | 0.03 | <0.01 |
| Acenaphthene | µg/L | 0.09 | 0.01 | 0.03 | 0.02 | <0.01 |
| Fluorene | µg/L | 0.02 | 0.02 | 0.10 | 0.03 | <0.01 |
| Phenanthrene | µg/L | 0.10 | 0.05 | 0.34 | 0.08 | 0.07 |
| Anthracene | µg/L | 0.02 | <0.01 | 0.06 | <0.01 | <0.01 |
| Fluoranthene | µg/L | 0.27 | 0.02 | 0.08 | 0.05 | 0.06 |
| Pyrene | µg/L | 0.25 | 0.02 | 0.07 | 0.04 | 0.06 |
| Benzo(a)anthracene | µg/L | 0.07 | <0.01 | <0.01 | <0.01 | 0.01 |
| Chrysene | µg/L | 0.07 | <0.01 | <0.01 | <0.01 | 0.02 |
| Benzo(b,j+k)fluoranthene | µg/L | 0.06 | <0.02 | <0.02 | <0.02 | 0.03 |
| Benzo(a)pyrene | µg/L | 0.03 | <0.01 | <0.01 | <0.01 | 0.01 |
| Dibenzo(a,h)anthracene | µg/L | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | 0.02 | <0.01 | <0.01 | <0.01 | 0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 1.1 | 0.21 | 0.79 | 0.37 | 0.27 |
| *Surrogate p*-Terphenyl-d14 | % | 78 | 61 | 71 | 82 | 77 |

| PAHs - ASLP Trace Level | | |
|---|---|---|
| Our Reference: | UNITS | 159472-A-22 |
| Your Reference | ---------- | 128 |
| | - | |
| Depth | ---------- | 0.6 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 05/01/2017 |
| Date analysed | - | 05/01/2017 |
| Naphthalene | µg/L | 0.03 |
| Acenaphthylene | µg/L | 0.01 |
| Acenaphthene | µg/L | <0.01 |
| Fluorene | µg/L | 0.02 |
| Phenanthrene | µg/L | 0.08 |
| Anthracene | µg/L | <0.01 |
| Fluoranthene | µg/L | 0.03 |
| Pyrene | µg/L | 0.02 |
| Benzo(a)anthracene | µg/L | <0.01 |
| Chrysene | µg/L | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 |
| Total +ve PAH's | µg/L | 0.19 |
| *Surrogate p*-Terphenyl-d14 | % | 71 |

| Metals-ASLP Sea Water (ICP-MS) | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-A-7 | 159472-A-8 | 159472-A-9 | 159472-A-17 | 159472-A-21 |
| Your Reference | ---------- | 122 | 122 | 122 | 127 | 128 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 7.6 | 7.8 | 7.8 | 7.8 | 7.6 |
| Arsenic in ASLP Sea Water | µg/L | 2 | 4 | 2 | 2 | 2 |
| Cadmium in ASLP Sea Water | µg/L | 27 | 0.9 | <0.1 | 0.2 | 8.0 |
| Chromium in ASLP Sea Water | µg/L | 5 | <1 | <1 | <1 | <1 |
| Copper in ASLP Sea Water | µg/L | 20 | 2 | <1 | 2 | 7 |
| Lead in ASLP Sea Water | µg/L | 7 | <1 | <1 | <1 | <1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 3 | <1 | <1 | <1 | 2 |
| Zinc in ASLP Sea Water | µg/L | 180 | 35 | 3 | 5 | 44 |
| Manganese in ASLP Sea Water | µg/L | 1,000 | <5 | <5 | 8 | <5 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,600 | 4,700 | 4,400 | 4,800 | 4,500 |
| Molybdenum in ASLP Sea Water | µg/L | 14 | 12 | 11 | 11 | 13 |
| Selenium in ASLP Sea Water | µg/L | <1 | <1 | <1 | <1 | <1 |

| Metals-ASLP Sea Water (ICP-MS) | | |
|---|---|---|
| Our Reference: | UNITS | 159472-A-22 |
| Your Reference | ---------- | 128 |
| Depth | ---------- | 0.6 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 04/01/2017 |
| Date analysed | - | 09/01/2017 |
| pH of final Leachate | pH units | 7.9 |
| Arsenic in ASLP Sea Water | µg/L | 2 |
| Cadmium in ASLP Sea Water | µg/L | <0.1 |
| Chromium in ASLP Sea Water | µg/L | <1 |
| Copper in ASLP Sea Water | µg/L | <1 |
| Lead in ASLP Sea Water | µg/L | <1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 |
| Nickel in ASLP Sea Water | µg/L | <1 |
| Zinc in ASLP Sea Water | µg/L | 3 |
| Manganese in ASLP Sea Water | µg/L | <5 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,600 |
| Molybdenum in ASLP Sea Water | µg/L | 11 |
| Selenium in ASLP Sea Water | µg/L | <1 |

| sTRH in sea water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-A-7<br>122<br><br>0.3<br>16/12/2016<br>soil | 159472-A-8<br>122<br><br>0.6<br>16/12/2016<br>soil | 159472-A-9<br>122<br><br>1.4<br>16/12/2016<br>soil | 159472-A-17<br>127<br><br>0.6<br>16/12/2016<br>soil | 159472-A-21<br>128<br><br>0.3<br>16/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | 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 | % | 130 | 120 | 125 | 90 | 105 |

| sTRH in sea water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159472-A-22<br>128<br><br>0.6<br>16/12/2016<br>soil |
|---|---|---|
| Date extracted | - | 05/01/2017 |
| Date analysed | - | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 |
| *Surrogate* o-Terphenyl | % | 65 |

| PAHs - ASLP Sea Water Trace Level | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159472-A-7 | 159472-A-8 | 159472-A-9 | 159472-A-17 | 159472-A-21 |
| Your Reference | ---------- | 122 | 122 | 122 | 127 | 128 |
| Depth | ---------- | 0.3 | 0.6 | 1.4 | 0.6 | 0.3 |
| Date Sampled | | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 | 16/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.25 | 0.02 | <0.02 | <0.02 | 0.02 |
| Acenaphthylene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acenaphthene | µg/L | 0.56 | <0.01 | <0.01 | <0.01 | 0.04 |
| Fluorene | µg/L | 0.26 | <0.01 | <0.01 | <0.01 | <0.01 |
| Phenanthrene | µg/L | 1.5 | 0.07 | 0.09 | 0.05 | 0.13 |
| Anthracene | µg/L | 0.21 | <0.01 | 0.01 | <0.01 | 0.02 |
| Fluoranthene | µg/L | 0.40 | 0.02 | 0.02 | 0.02 | 0.03 |
| Pyrene | µg/L | 0.30 | 0.02 | 0.02 | 0.02 | 0.02 |
| Benzo(a)anthracene | µg/L | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chrysene | µg/L | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 3.5 | 0.13 | 0.14 | 0.090 | 0.26 |
| *Surrogate p*-Terphenyl-d14 | % | 63 | 65 | 75 | 70 | 68 |

| PAHs - ASLP Sea Water Trace Level | | |
|---|---|---|
| Our Reference: | UNITS | 159472-A-22 |
| Your Reference | ---------- - | 128 |
| Depth | ---------- | 0.6 |
| Date Sampled | | 16/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 05/01/2017 |
| Date analysed | - | 05/01/2017 |
| Naphthalene | µg/L | <0.02 |
| Acenaphthylene | µg/L | <0.01 |
| Acenaphthene | µg/L | <0.01 |
| Fluorene | µg/L | <0.01 |
| Phenanthrene | µg/L | 0.06 |
| Anthracene | µg/L | <0.01 |
| Fluoranthene | µg/L | <0.01 |
| Pyrene | µg/L | <0.01 |
| Benzo(a)anthracene | µg/L | <0.01 |
| Chrysene | µg/L | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 |
| Total +ve PAH's | µg/L | 0.060 |
| *Surrogate p*-Terphenyl-d14 | % | 110 |

| Method ID | Methodology Summary |
|---|---|
| Inorg-004 | Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. |
| EXTRACT.7 | Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Metals-020 ICP-AES | Determination of various metals by ICP-AES. |
| Org-012 | Leachates are extracted with Dichloromethane and analysed by GC-MS. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997. |
| Metals-021 ASLP | Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003_NEUTRAL | Leachates are extracted with Dichloromethane and analysed by GC-FID. |

| QUALITY CONTROL<br><br>Metals in TCLP USEPA1311 | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 06/01/2017 | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Date analysed | - | | | 06/01/2017 | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Lead in TCLP | mg/L | 0.03 | Metals-020 ICP-AES | <0.03 | [NT] | [NT] | LCS-W1 | 96% |
| QUALITY CONTROL<br><br>PAHs in TCLP (USEPA 1311) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Naphthalene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 91% |
| Acenaphthylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluorene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 90% |
| Phenanthrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 93% |
| Anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 81% |
| Pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 87% |
| Benzo(a)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Chrysene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(bjk)fluoranthene in TCLP | mg/L | 0.002 | Org-012 | <0.002 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 109% |
| Indeno(1,2,3-c,d)pyrene -TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 80 | [NT] | [NT] | LCS-W1 | 92% |

| QUALITY CONTROL<br><br>Metals-ASLP Neutral (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 | 159472-A-8 | 04/01/2017 \|\| 04/01/2017 | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 | 159472-A-8 | 09/01/2017 \|\| 09/01/2017 | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | 7 \|\| 7 \|\| RPD: 0 | LCS-W1 | 98% |
| Cadmium in ASLP | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | 159472-A-8 | 0.1 \|\| <0.1 | LCS-W1 | 99% |
| Chromium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | 1 \|\| 1 \|\| RPD: 0 | LCS-W1 | 94% |
| Copper in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | 4 \|\| 4 \|\| RPD: 0 | LCS-W1 | 91% |
| Lead in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | 4 \|\| 4 \|\| RPD: 0 | LCS-W1 | 98% |
| Mercury in ASLP | µg/L | 0.05 | Metals-021 ASLP | <0.05 | 159472-A-8 | <0.05 \|\| <0.05 | LCS-W1 | 90% |
| Nickel in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | <1 \|\| <1 | LCS-W1 | 93% |
| Zinc in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | 55 \|\| 55 \|\| RPD: 0 | LCS-W1 | 99% |
| Manganese in ASLP | µg/L | 5 | Metals-022 ICP-MS | <5 | 159472-A-8 | 30 \|\| 30 \|\| RPD: 0 | LCS-W1 | 93% |
| Beryllium in ASLP | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | 159472-A-8 | <0.5 \|\| <0.5 | LCS-W1 | 90% |
| Boron in ASLP | µg/L | 20 | Metals-022 ICP-MS | <20 | 159472-A-8 | <20 \|\| <20 | LCS-W1 | 93% |
| Molybdenum in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | <1 \|\| <1 | LCS-W1 | 94% |
| Selenium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 | 159472-A-8 | <1 \|\| <1 | LCS-W1 | 95% |

| QUALITY CONTROL<br>sTRH in water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 90% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 103% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 90% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 103% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 102 | [NT] | [NT] | LCS-W1 | 81% |

| QUALITY CONTROL<br>PAHs - ASLP Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W1 | 100% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 110% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 130% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 96% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 77% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 70 | [NT] | [NT] | LCS-W1 | 80% |

| QUALITY CONTROL<br><br>Metals-ASLP Sea Water (ICP-MS) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 92% |
| Cadmium in ASLP Sea Water | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W1 | 97% |
| Chromium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 89% |
| Copper in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 88% |
| Lead in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 97% |
| Mercury in ASLP Sea Water | µg/L | 0.05 | Metals-021 ASLP | <0.05 | [NT] | [NT] | LCS-W1 | 89% |
| Nickel in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 88% |
| Zinc in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 89% |
| Manganese in ASLP Sea Water | µg/L | 5 | Metals-022 ICP-MS | <5 | [NT] | [NT] | LCS-W1 | 87% |
| Beryllium in ASLP Sea Water | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W1 | 83% |
| Boron in ASLP Sea Water | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W1 | 96% |
| Molybdenum in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 93% |
| Selenium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W1 | 91% |

| QUALITY CONTROL<br>sTRH in sea water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 90% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 103% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 90% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 103% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 102 | [NT] | [NT] | LCS-W1 | 81% |

| QUALITY CONTROL<br>PAHs - ASLP Sea Water Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W1 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W1 | 100% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 110% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 130% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 96% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 77% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W1 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 70 | [NT] | [NT] | LCS-W1 | 80% |

| QUALITY CONTROL<br>Metals-ASLP Neutral (ICP-MS) | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | [NT] | [NT] | 159472-A-22 | 04/01/2017 |
| Date analysed | - | [NT] | [NT] | 159472-A-22 | 09/01/2017 |
| Arsenic in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 91% |
| Cadmium in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 95% |
| Chromium in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 88% |

| QUALITY CONTROL Metals-ASLP Neutral (ICP-MS) | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Copper in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 83% |
| Lead in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 95% |
| Mercury in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 91% |
| Nickel in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 86% |
| Zinc in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 90% |
| Manganese in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 87% |
| Beryllium in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 85% |
| Boron in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 86% |
| Molybdenum in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 95% |
| Selenium in ASLP | µg/L | [NT] | [NT] | 159472-A-22 | 91% |

| QUALITY CONTROL Metals-ASLP Sea Water (ICP-MS) | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159472-A-17 | 04/01/2017 \|\| 04/01/2017 |
| Date analysed | - | 159472-A-17 | 09/01/2017 \|\| 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | 159472-A-17 | 2 \|\| 2 \|\| RPD: 0 |
| Cadmium in ASLP Sea Water | µg/L | 159472-A-17 | 0.2 \|\| 0.2 \|\| RPD: 0 |
| Chromium in ASLP Sea Water | µg/L | 159472-A-17 | <1 \|\| <1 |
| Copper in ASLP Sea Water | µg/L | 159472-A-17 | 2 \|\| 2 \|\| RPD: 0 |
| Lead in ASLP Sea Water | µg/L | 159472-A-17 | <1 \|\| <1 |
| Mercury in ASLP Sea Water | µg/L | 159472-A-17 | <0.05 \|\| <0.05 |
| Nickel in ASLP Sea Water | µg/L | 159472-A-17 | <1 \|\| <1 |
| Zinc in ASLP Sea Water | µg/L | 159472-A-17 | 5 \|\| 4 \|\| RPD: 22 |
| Manganese in ASLP Sea Water | µg/L | 159472-A-17 | 8 \|\| 8 \|\| RPD: 0 |
| Beryllium in ASLP Sea Water | µg/L | 159472-A-17 | <0.5 \|\| <0.5 |
| Boron in ASLP Sea Water | µg/L | 159472-A-17 | 4800 \|\| 4400 \|\| RPD: 9 |
| Molybdenum in ASLP Sea Water | µg/L | 159472-A-17 | 11 \|\| 12 \|\| RPD: 9 |
| Selenium in ASLP Sea Water | µg/L | 159472-A-17 | <1 \|\| <1 |

**Report Comments:**

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159554

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034, Newcastle** | | |
| No. of samples: | 41 soils 1 material | | |
| Date samples received / completed instructions received | 21/12/16 | / | 21/12/16 |

**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: / Issue Date: | 5/01/17 | / | 30/12/16 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-2 | 159554-3 | 159554-4 | 159554-5 |
| Your Reference | ---------- - | 123 | 123 | 129 | 129 | 129 |
| Depth | ---------- | 0.7 | 1.9 | 0.3 | 0.6 | 2.7 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 84 | 81 | 78 | 84 | 80 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-13 | 159554-14 | 159554-15 | 159554-16 | 159554-17 |
| Your Reference | ---------- - | 116 | 116 | 115 | 115 | 105 |
| Depth | ---------- | 0.4 | 2.0 | 0.3 | 1.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 84 | 83 | 86 | 84 | 87 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-18 | 159554-19 | 159554-20 | 159554-21 | 159554-22 |
| Your Reference | ---------- - | 105 | 109 | 109 | 109 | 110 |
| Depth | ---------- | 1.0 | 0.4 | 1.0 | 3.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC6 - C9 | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC6 - C10 | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC6 - C10 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 89 | 87 | 85 | 82 | 88 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-23 | 159554-24 | 159554-25 | 159554-26 | 159554-27 |
| Your Reference | ---------- - | 110 | 108 | 108 | 108 | 102 |
| Depth | ---------- | 2.2 | 0.4 | 1.0 | 2.9 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC6 - C9 | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC6 - C10 | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC6 - C10 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 85 | 89 | 91 | 78 | 88 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-28 | 159554-29 | 159554-30 | 159554-31 | 159554-32 |
| Your Reference | ---------- - | 102 | 102 | 106 | 106 | 104 |
| Depth | ---------- | 1.0 | 2.0 | 0.5 | 1.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 88 | 85 | 82 | 87 | 86 |

| vTRH(C6-C10)/BTEXN in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 | 159554-35 | 159554-36 | 159554-37 |
| Your Reference | ---------- - | 104 | 117 | 117 | 117 | D14 |
| Depth | ---------- | 0.55 | 0.4 | 1.0 | 3.0 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 | <25 | <25 |
| vTPHC$_6$ - 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 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 89 | 87 | 90 | 82 | 88 |

| vTRH(C6-C10)/BTEXN in Soil | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-38 | 159554-39 | 159554-40 |
| Your Reference | ---------- - | D15 | D16 | D17 |
| Depth | ---------- | - | - | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 23/12/2016 | 23/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 | <25 | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 | <25 | <25 |
| vTPHC$_6$ - C$_{10}$ less BTEX (F1) | mg/kg | <25 | <25 | <25 |
| Benzene | mg/kg | <0.2 | <0.2 | <0.2 |
| Toluene | mg/kg | <0.5 | <0.5 | <0.5 |
| Ethylbenzene | mg/kg | <1 | <1 | <1 |
| m+p-xylene | mg/kg | <2 | <2 | <2 |
| o-Xylene | mg/kg | <1 | <1 | <1 |
| Total +ve Xylenes | mg/kg | <1 | <1 | <1 |
| naphthalene | mg/kg | <1 | <1 | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 90 | 89 | 88 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-2 | 159554-3 | 159554-4 | 159554-5 |
| Your Reference | ---------- - | 123 | 123 | 129 | 129 | 129 |
| Depth | ---------- | 0.7 | 1.9 | 0.3 | 0.6 | 2.7 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 23/12/2016 | 23/12/2016 | 23/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 95 | 93 | 99 | 99 | 85 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-13 | 159554-14 | 159554-15 | 159554-16 | 159554-17 |
| Your Reference | ---------- - | 116 | 116 | 115 | 115 | 105 |
| Depth | ---------- | 0.4 | 2.0 | 0.3 | 1.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 84 | 86 | 97 | 94 | 96 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-18 | 159554-19 | 159554-20 | 159554-21 | 159554-22 |
| Your Reference | ---------- - | 105 | 109 | 109 | 109 | 110 |
| Depth | ---------- | 1.0 | 0.4 | 1.0 | 3.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 93 | 90 | 93 | 80 | 98 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-23 | 159554-24 | 159554-25 | 159554-26 | 159554-27 |
| Your Reference | ---------- - | 110 | 108 | 108 | 108 | 102 |
| Depth | ---------- | 2.2 | 0.4 | 1.0 | 2.9 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 93 | 92 | 98 | 83 | 90 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-28 | 159554-29 | 159554-30 | 159554-31 | 159554-32 |
| Your Reference | ---------- - | 102 | 102 | 106 | 106 | 104 |
| Depth | ---------- | 1.0 | 2.0 | 0.5 | 1.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 89 | 92 | 97 | 87 | 91 |

| svTRH (C10-C40) in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 | 159554-35 | 159554-36 | 159554-37 |
| Your Reference | ---------- - | 104 | 117 | 117 | 117 | D14 |
| Depth | ---------- | 0.55 | 0.4 | 1.0 | 3.0 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 | 240 | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | <100 | 180 | <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 | 370 | <100 | <100 | <100 |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | 370 | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 94 | 116 | 92 | 86 | 96 |

| svTRH (C10-C40) in Soil | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-38 | 159554-39 | 159554-40 |
| Your Reference | ---------- | D15 | D16 | D17 |
| Depth | - ---------- | - | - | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 24/12/2016 | 24/12/2016 | 24/12/2016 |
| $TRHC_{10}$ - $C_{14}$ | mg/kg | <50 | <50 | <50 |
| $TRHC_{15}$ - $C_{28}$ | mg/kg | <100 | <100 | <100 |
| $TRHC_{29}$ - $C_{36}$ | mg/kg | <100 | <100 | <100 |
| $TRH>C_{10}$-$C_{16}$ | mg/kg | <50 | <50 | <50 |
| $TRH>C_{10}$ - $C_{16}$ less Naphthalene (F2) | mg/kg | <50 | <50 | <50 |
| $TRH>C_{16}$-$C_{34}$ | mg/kg | <100 | <100 | <100 |
| $TRH>C_{34}$-$C_{40}$ | mg/kg | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | mg/kg | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 91 | 90 | 92 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-1<br>123<br><br>0.7<br>19/12/2016<br>soil | 159554-2<br>123<br><br>1.9<br>19/12/2016<br>soil | 159554-3<br>129<br><br>0.3<br>19/12/2016<br>soil | 159554-4<br>129<br><br>0.6<br>19/12/2016<br>soil | 159554-5<br>129<br><br>2.7<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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 | 0.3 | 0.1 | 0.7 | <0.1 | <0.1 |
| Anthracene | mg/kg | 0.1 | <0.1 | 0.2 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 1.1 | 0.4 | 2.0 | <0.1 | <0.1 |
| Pyrene | mg/kg | 1.0 | 0.4 | 1.9 | <0.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | 0.4 | 0.2 | 0.9 | <0.1 | <0.1 |
| Chrysene | mg/kg | 0.4 | 0.2 | 1 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.6 | 0.3 | 2 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.3 | 0.1 | 0.84 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.2 | 0.1 | 0.5 | <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 | 0.2 | 0.1 | 0.7 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 4.8 | 2.0 | 11 | <0.05 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 84 | 87 | 84 | 89 | 85 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-13<br>116<br><br>0.4<br>19/12/2016<br>soil | 159554-14<br>116<br><br>2.0<br>19/12/2016<br>soil | 159554-15<br>115<br><br>0.3<br>19/12/2016<br>soil | 159554-16<br>115<br><br>1.0<br>19/12/2016<br>soil | 159554-17<br>105<br><br>0.4<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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 | 0.3 | <0.1 | 0.4 | <0.1 | <0.1 |
| Anthracene | mg/kg | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 0.9 | <0.1 | 1.0 | <0.1 | 0.2 |
| Pyrene | mg/kg | 0.9 | <0.1 | 1 | <0.1 | 0.2 |
| Benzo(a)anthracene | mg/kg | 0.4 | <0.1 | 0.4 | <0.1 | <0.1 |
| Chrysene | mg/kg | 0.4 | <0.1 | 0.5 | <0.1 | 0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.7 | <0.2 | 0.8 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | 0.4 | <0.05 | 0.4 | <0.05 | 0.1 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.3 | <0.1 | 0.3 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | 0.3 | <0.1 | 0.4 | <0.1 | 0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | <0.5 | 0.6 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | <0.5 | 0.6 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | <0.5 | 0.6 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 4.5 | <0.05 | 5.3 | <0.05 | 0.75 |
| *Surrogate p*-Terphenyl-d14 | % | 87 | 85 | 89 | 90 | 88 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-18<br>105<br><br>1.0<br>19/12/2016<br>soil | 159554-19<br>109<br><br>0.4<br>19/12/2016<br>soil | 159554-20<br>109<br><br>1.0<br>19/12/2016<br>soil | 159554-21<br>109<br><br>3.0<br>19/12/2016<br>soil | 159554-22<br>110<br><br>0.4<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | 0.2 | <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 | 0.8 | 1.7 | <0.1 | 1.1 |
| Anthracene | mg/kg | <0.1 | 0.3 | 0.4 | <0.1 | 0.3 |
| Fluoranthene | mg/kg | <0.1 | 3.4 | 1.4 | 0.1 | 3.0 |
| Pyrene | mg/kg | <0.1 | 3.2 | 1.3 | <0.1 | 2.9 |
| Benzo(a)anthracene | mg/kg | <0.1 | 1.4 | 0.3 | <0.1 | 1.1 |
| Chrysene | mg/kg | <0.1 | 1.4 | 0.3 | <0.1 | 1.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | 2.2 | 0.5 | <0.2 | 2 |
| Benzo(a)pyrene | mg/kg | <0.05 | 1.2 | 0.3 | <0.05 | 1.1 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | 0.8 | 0.2 | <0.1 | 0.7 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | 0.2 | <0.1 | <0.1 | 0.1 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | 1 | 0.2 | <0.1 | 0.9 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | 1.9 | <0.5 | <0.5 | 1.6 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | 1.9 | <0.5 | <0.5 | 1.6 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | 1.9 | <0.5 | <0.5 | 1.6 |
| Total +ve PAH's | mg/kg | <0.05 | 16 | 6.7 | 0.1 | 15 |
| *Surrogate p*-Terphenyl-d14 | % | 91 | 90 | 89 | 88 | 88 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br>-<br>- | 159554-23<br>110<br><br>2.2<br>19/12/2016<br>soil | 159554-24<br>108<br><br>0.4<br>19/12/2016<br>soil | 159554-25<br>108<br><br>1.0<br>19/12/2016<br>soil | 159554-26<br>108<br><br>2.9<br>19/12/2016<br>soil | 159554-27<br>102<br><br>0.4<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | 0.2 | <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 | 0.9 | <0.1 | 0.1 | <0.1 |
| Anthracene | mg/kg | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 0.1 | 1.9 | <0.1 | 0.2 | <0.1 |
| Pyrene | mg/kg | 0.1 | 1.8 | <0.1 | 0.3 | <0.1 |
| Benzo(a)anthracene | mg/kg | <0.1 | 0.8 | <0.1 | 0.1 | <0.1 |
| Chrysene | mg/kg | <0.1 | 0.8 | <0.1 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | 1 | <0.2 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | <0.05 | 0.71 | <0.05 | 0.07 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | 0.4 | <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 | 0.5 | <0.1 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | 1.1 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | 1.1 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | 1.1 | <0.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 0.2 | 9.8 | <0.05 | 0.83 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 86 | 90 | 88 | 94 | 91 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br>- | 159554-28<br>102<br><br>1.0<br>19/12/2016<br>soil | 159554-29<br>102<br><br>2.0<br>19/12/2016<br>soil | 159554-30<br>106<br><br>0.5<br>19/12/2016<br>soil | 159554-31<br>106<br><br>1.5<br>19/12/2016<br>soil | 159554-32<br>104<br><br>0.3<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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 | 0.4 | <0.1 | <0.1 | 0.5 |
| Anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| Fluoranthene | mg/kg | <0.1 | 0.5 | 0.2 | <0.1 | 1.5 |
| Pyrene | mg/kg | <0.1 | 0.5 | 0.1 | <0.1 | 1.4 |
| Benzo(a)anthracene | mg/kg | <0.1 | 0.2 | <0.1 | <0.1 | 0.5 |
| Chrysene | mg/kg | <0.1 | 0.2 | <0.1 | <0.1 | 0.6 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | 0.3 | <0.2 | <0.2 | 0.9 |
| Benzo(a)pyrene | mg/kg | <0.05 | 0.1 | 0.05 | <0.05 | 0.5 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | 0.3 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | 0.4 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 |
| Total +ve PAH's | mg/kg | <0.05 | 2.5 | 0.4 | <0.05 | 6.8 |
| *Surrogate p*-Terphenyl-d14 | % | 87 | 91 | 93 | 91 | 82 |

| PAHs in Soil<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-33<br>104<br><br>0.55<br>19/12/2016<br>soil | 159554-34<br>117<br><br>0.4<br>19/12/2016<br>soil | 159554-35<br>117<br><br>1.0<br>19/12/2016<br>soil | 159554-36<br>117<br><br>3.0<br>19/12/2016<br>soil | 159554-37<br>D14<br><br>-<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Naphthalene | mg/kg | <0.1 | 0.4 | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | 0.7 | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | 0.6 | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | <0.1 | 9.1 | <0.1 | <0.1 | 0.2 |
| Anthracene | mg/kg | <0.1 | 1.9 | <0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | 0.2 | 15 | <0.1 | <0.1 | 0.5 |
| Pyrene | mg/kg | 0.2 | 13 | <0.1 | <0.1 | 0.5 |
| Benzo(a)anthracene | mg/kg | <0.1 | 4.4 | <0.1 | <0.1 | 0.2 |
| Chrysene | mg/kg | <0.1 | 4.5 | <0.1 | <0.1 | 0.2 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | 6.5 | <0.2 | <0.2 | 0.3 |
| Benzo(a)pyrene | mg/kg | 0.06 | 3.6 | <0.05 | <0.05 | 0.2 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | 2.5 | <0.1 | <0.1 | 0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | 3.1 | <0.1 | <0.1 | 0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | 5.2 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | 5.2 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | 5.2 | <0.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | 0.4 | 67 | <0.05 | <0.05 | 2.3 |
| *Surrogate p*-Terphenyl-d14 | % | 89 | 86 | 90 | 79 | 85 |

| PAHs in Soil<br>Our Reference:<br>Your Reference | UNITS<br>---------- | 159554-38<br>D15 | 159554-39<br>D16 | 159554-40<br>D17 |
|---|---|---|---|---|
| Depth | - | - | - | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Naphthalene | mg/kg | <0.1 | <0.1 | <0.1 |
| Acenaphthylene | mg/kg | <0.1 | <0.1 | <0.1 |
| Acenaphthene | mg/kg | <0.1 | <0.1 | <0.1 |
| Fluorene | mg/kg | <0.1 | <0.1 | <0.1 |
| Phenanthrene | mg/kg | <0.1 | <0.1 | <0.1 |
| Anthracene | mg/kg | <0.1 | <0.1 | <0.1 |
| Fluoranthene | mg/kg | <0.1 | <0.1 | <0.1 |
| Pyrene | mg/kg | <0.1 | <0.1 | <0.1 |
| Benzo(a)anthracene | mg/kg | <0.1 | <0.1 | <0.1 |
| Chrysene | mg/kg | <0.1 | <0.1 | <0.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | <0.2 | <0.2 | <0.2 |
| Benzo(a)pyrene | mg/kg | <0.05 | <0.05 | <0.05 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | <0.1 | <0.1 | <0.1 |
| Dibenzo(a,h)anthracene | mg/kg | <0.1 | <0.1 | <0.1 |
| Benzo(g,h,i)perylene | mg/kg | <0.1 | <0.1 | <0.1 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | <0.5 | <0.5 | <0.5 |
| Total +ve PAH's | mg/kg | <0.05 | <0.05 | <0.05 |
| *Surrogate p*-Terphenyl-d14 | % | 92 | 89 | 92 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-3 | 159554-13 | 159554-14 | 159554-15 |
| Your Reference | ---------- | 123 | 129 | 116 | 116 | 115 |
| Depth | ---------- | 0.7 | 0.3 | 0.4 | 2.0 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 101 | 100 | 103 | 97 | 101 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-17 | 159554-19 | 159554-21 | 159554-22 | 159554-24 |
| Your Reference | ---------- - | 105 | 109 | 109 | 110 | 108 |
| Depth | ---------- | 0.4 | 0.4 | 3.0 | 0.4 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 103 | 101 | 98 | 106 | 101 |

| Organochlorine Pesticides in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-26 | 159554-27 | 159554-28 | 159554-30 | 159554-32 |
| Your Reference | ---------- | 108 | 102 | 102 | 106 | 104 |
| | - | | | | | |
| Depth | ---------- | 2.9 | 0.4 | 1.0 | 0.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Aldrin | mg/kg | <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 |
| pp-DDD | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 98 | 102 | 103 | 106 | 102 |

| Organochlorine Pesticides in soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 |
| Your Reference | ---------- | 104 | 117 |
| | - | | |
| Depth | ---------- | 0.55 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| HCB | mg/kg | <0.1 | <0.1 |
| alpha-BHC | mg/kg | <0.1 | <0.1 |
| gamma-BHC | mg/kg | <0.1 | <0.1 |
| beta-BHC | mg/kg | <0.1 | <0.1 |
| Heptachlor | mg/kg | <0.1 | <0.1 |
| delta-BHC | mg/kg | <0.1 | <0.1 |
| Aldrin | mg/kg | <0.1 | <0.1 |
| Heptachlor Epoxide | mg/kg | <0.1 | <0.1 |
| gamma-Chlordane | mg/kg | <0.1 | <0.1 |
| alpha-chlordane | mg/kg | <0.1 | <0.1 |
| Endosulfan I | mg/kg | <0.1 | <0.1 |
| pp-DDE | mg/kg | <0.1 | <0.1 |
| Dieldrin | mg/kg | <0.1 | <0.1 |
| Endrin | mg/kg | <0.1 | <0.1 |
| pp-DDD | mg/kg | <0.1 | <0.1 |
| Endosulfan II | mg/kg | <0.1 | <0.1 |
| pp-DDT | mg/kg | <0.1 | <0.1 |
| Endrin Aldehyde | mg/kg | <0.1 | <0.1 |
| Endosulfan Sulphate | mg/kg | <0.1 | <0.1 |
| Methoxychlor | mg/kg | <0.1 | <0.1 |
| Total +ve DDT+DDD+DDE | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 107 | 97 |

| Organophosphorus Pesticides | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-3 | 159554-13 | 159554-14 | 159554-15 |
| Your Reference | ---------- | 123 | 129 | 116 | 116 | 115 |
| Depth | ---------- | 0.7 | 0.3 | 0.4 | 2.0 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 101 | 100 | 103 | 97 | 101 |

| Organophosphorus Pesticides | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-17 | 159554-19 | 159554-21 | 159554-22 | 159554-24 |
| Your Reference | ---------- | 105 | 109 | 109 | 110 | 108 |
| Depth | ---------- | 0.4 | 0.4 | 3.0 | 0.4 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 103 | 101 | 98 | 106 | 101 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-26<br>108<br><br>2.9<br>19/12/2016<br>soil | 159554-27<br>102<br><br>0.4<br>19/12/2016<br>soil | 159554-28<br>102<br><br>1.0<br>19/12/2016<br>soil | 159554-30<br>106<br><br>0.5<br>19/12/2016<br>soil | 159554-32<br>104<br><br>0.3<br>19/12/2016<br>soil |
|---|---|---|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 98 | 102 | 103 | 106 | 102 |

| Organophosphorus Pesticides<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br> | 159554-33<br>104<br><br>0.55<br>19/12/2016<br>soil | 159554-34<br>117<br><br>0.4<br>19/12/2016<br>soil |
|---|---|---|---|
| Date extracted | - | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | <0.1 | <0.1 |
| Bromophos-ethyl | mg/kg | <0.1 | <0.1 |
| Chlorpyriphos | mg/kg | <0.1 | <0.1 |
| Chlorpyriphos-methyl | mg/kg | <0.1 | <0.1 |
| Diazinon | mg/kg | <0.1 | <0.1 |
| Dichlorvos | mg/kg | <0.1 | <0.1 |
| Dimethoate | mg/kg | <0.1 | <0.1 |
| Ethion | mg/kg | <0.1 | <0.1 |
| Fenitrothion | mg/kg | <0.1 | <0.1 |
| Malathion | mg/kg | <0.1 | <0.1 |
| Parathion | mg/kg | <0.1 | <0.1 |
| Ronnel | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCMX | % | 107 | 97 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-3 | 159554-13 | 159554-14 | 159554-15 |
| Your Reference | ---------- | 123 | 129 | 116 | 116 | 115 |
| | - | | | | | |
| Depth | ---------- | 0.7 | 0.3 | 0.4 | 2.0 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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* TCLMX | % | 101 | 100 | 103 | 97 | 101 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-17 | 159554-19 | 159554-21 | 159554-22 | 159554-24 |
| Your Reference | ---------- | 105 | 109 | 109 | 110 | 108 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 0.4 | 3.0 | 0.4 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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* TCLMX | % | 103 | 101 | 98 | 106 | 101 |

| PCBs in Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-26 | 159554-27 | 159554-28 | 159554-30 | 159554-32 |
| Your Reference | ---------- | 108 | 102 | 102 | 106 | 104 |
| | - | | | | | |
| Depth | ---------- | 2.9 | 0.4 | 1.0 | 0.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| 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* TCLMX | % | 98 | 102 | 103 | 106 | 102 |

| PCBs in Soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 |
| Your Reference | ---------- | 104 | 117 |
| | - | | |
| Depth | ---------- | 0.55 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date extracted | - | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| Aroclor 1016 | mg/kg | <0.1 | <0.1 |
| Aroclor 1221 | mg/kg | <0.1 | <0.1 |
| Aroclor 1232 | mg/kg | <0.1 | <0.1 |
| Aroclor 1242 | mg/kg | <0.1 | <0.1 |
| Aroclor 1248 | mg/kg | <0.1 | <0.1 |
| Aroclor 1254 | mg/kg | <0.1 | <0.1 |
| Aroclor 1260 | mg/kg | <0.1 | <0.1 |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1 | <0.1 |
| *Surrogate* TCLMX | % | 107 | 97 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-2 | 159554-3 | 159554-4 | 159554-5 |
| Your Reference | ---------- | 123 | 123 | 129 | 129 | 129 |
| | - | | | | | |
| Depth | ---------- | 0.7 | 1.9 | 0.3 | 0.6 | 2.7 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | <4 | <4 | 20 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | 1 | <0.4 | <0.4 |
| Chromium | mg/kg | 3 | 2 | 16 | 1 | 1 |
| Copper | mg/kg | 7 | 18 | 220 | 2 | <1 |
| Lead | mg/kg | 11 | 8 | 160 | 3 | 1 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 2 | 2 | 15 | <1 | 1 |
| Zinc | mg/kg | 29 | 26 | 200 | 12 | 3 |
| Manganese | mg/kg | 58 | 37 | 490 | 11 | 11 |
| Iron | mg/kg | 2,700 | 2,100 | 28,000 | 1,200 | 1,100 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-13 | 159554-14 | 159554-15 | 159554-16 | 159554-17 |
| Your Reference | ---------- | 116 | 116 | 115 | 115 | 105 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 2.0 | 0.3 | 1.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | 5 | 4 | 4 | <4 | 5 |
| Cadmium | mg/kg | <0.4 | <0.4 | 1 | <0.4 | <0.4 |
| Chromium | mg/kg | 8 | 1 | 16 | 1 | 2 |
| Copper | mg/kg | 37 | <1 | 34 | 1 | 3 |
| Lead | mg/kg | 46 | <1 | 72 | 1 | 6 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 8 | <1 | 11 | <1 | 2 |
| Zinc | mg/kg | 95 | 4 | 280 | 3 | 36 |
| Manganese | mg/kg | 310 | 12 | 480 | 12 | 36 |
| Iron | mg/kg | 9,100 | 1,600 | 14,000 | 1,000 | 2,000 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-18 | 159554-19 | 159554-20 | 159554-21 | 159554-22 |
| Your Reference | ---------- - | 105 | 109 | 109 | 109 | 110 |
| Depth | ---------- | 1.0 | 0.4 | 1.0 | 3.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | 6 | 6 | <4 | <4 | 8 |
| Cadmium | mg/kg | <0.4 | 1 | <0.4 | <0.4 | 0.6 |
| Chromium | mg/kg | 2 | 10 | 2 | 2 | 8 |
| Copper | mg/kg | 4 | 43 | 2 | 2 | 82 |
| Lead | mg/kg | 19 | 89 | 3 | 4 | 96 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 1 | 8 | 1 | 1 | 7 |
| Zinc | mg/kg | 37 | 220 | 10 | 11 | 280 |
| Manganese | mg/kg | 57 | 300 | 22 | 19 | 200 |
| Iron | mg/kg | 1,600 | 12,000 | 1,500 | 1,700 | 12,000 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-23 | 159554-24 | 159554-25 | 159554-26 | 159554-27 |
| Your Reference | ---------- - | 110 | 108 | 108 | 108 | 102 |
| Depth | ---------- | 2.2 | 0.4 | 1.0 | 2.9 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | <4 | 6 | <4 | 8 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 3 | 17 | 2 | 4 | 1 |
| Copper | mg/kg | 2 | 76 | 1 | 11 | <1 |
| Lead | mg/kg | 3 | 89 | 2 | 7 | 2 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | <1 | 12 | <1 | 4 | 1 |
| Zinc | mg/kg | 10 | 170 | 4 | 18 | 3 |
| Manganese | mg/kg | 20 | 440 | 15 | 50 | 15 |
| Iron | mg/kg | 1,500 | 15,000 | 1,500 | 5,300 | 1,300 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-28 | 159554-29 | 159554-30 | 159554-31 | 159554-32 |
| Your Reference | ---------- | 102 | 102 | 106 | 106 | 104 |
| Depth | ---------- | 1.0 | 2.0 | 0.5 | 1.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | <4 | 4 | <4 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | 0.6 |
| Chromium | mg/kg | 1 | 8 | 4 | 1 | 19 |
| Copper | mg/kg | 1 | 21 | 5 | 2 | 37 |
| Lead | mg/kg | 2 | 37 | 9 | 3 | 42 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 1 | 7 | 2 | <1 | 14 |
| Zinc | mg/kg | 7 | 120 | 44 | 20 | 120 |
| Manganese | mg/kg | 18 | 85 | 46 | 22 | 330 |
| Iron | mg/kg | 1,400 | 7,000 | 2,500 | 1,400 | 17,000 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 | 159554-35 | 159554-36 | 159554-37 |
| Your Reference | ---------- | 104 | 117 | 117 | 117 | D14 |
| Depth | ---------- | 0.55 | 0.4 | 1.0 | 3.0 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | 5 | 11 | <4 | <4 | <4 |
| Cadmium | mg/kg | <0.4 | 2 | <0.4 | <0.4 | <0.4 |
| Chromium | mg/kg | 3 | 10 | 1 | 1 | 2 |
| Copper | mg/kg | 8 | 110 | 2 | <1 | 10 |
| Lead | mg/kg | 15 | 200 | 4 | 1 | 7 |
| Mercury | mg/kg | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | 3 | 14 | <1 | <1 | 2 |
| Zinc | mg/kg | 32 | 500 | 36 | 6 | 20 |
| Manganese | mg/kg | 93 | 940 | 13 | 9 | 40 |
| Iron | mg/kg | 3,800 | 19,000 | 1,000 | 980 | 2,000 |

| Acid Extractable metals in soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-38 | 159554-39 | 159554-40 | 159554-43 | 159554-44 |
| Your Reference | ---------- - | D15 | D16 | D17 | 123 - [TRIPLICATE] | 109 - [TRIPLICATE] |
| Depth | ---------- | - | - | - | 0.7 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | <4 | <4 | <4 | <4 | 6 |
| Cadmium | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | 1 |
| Chromium | mg/kg | 1 | 2 | 1 | 65 | 11 |
| Copper | mg/kg | 1 | 4 | <1 | 7 | 44 |
| Lead | mg/kg | 2 | 4 | 1 | 8 | 94 |
| Mercury | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Nickel | mg/kg | <1 | 1 | <1 | 3 | 9 |
| Zinc | mg/kg | 8 | 9 | 3 | 23 | 220 |
| Manganese | mg/kg | 11 | 18 | 12 | 1,800 | 520 |
| Iron | mg/kg | 1,200 | 1,500 | 1,300 | 11,000 | 13,000 |

| Acid Extractable metals in soil | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159554-45 | 159554-46 |
| Your Reference | ---------- - | 102 - [TRIPLICATE] | D15 - [TRIPLICATE] |
| Depth | ---------- | 1.0 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 |
| Arsenic | mg/kg | <4 | <4 |
| Cadmium | mg/kg | <0.4 | <0.4 |
| Chromium | mg/kg | 2 | 1 |
| Copper | mg/kg | 1 | 2 |
| Lead | mg/kg | 3 | 3 |
| Mercury | mg/kg | <0.1 | <0.1 |
| Nickel | mg/kg | 1 | 1 |
| Zinc | mg/kg | 7 | 25 |
| Manganese | mg/kg | 23 | 13 |
| Iron | mg/kg | 1,500 | 1,100 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-2 | 159554-3 | 159554-4 | 159554-5 |
| Your Reference | ---------- - | 123 | 123 | 129 | 129 | 129 |
| Depth | ---------- | 0.7 | 1.9 | 0.3 | 0.6 | 2.7 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 8.6 | 9.2 | 8.9 | 9.1 | 9.2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 98 | 50 | 140 | 46 | 53 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-6 | 159554-9 | 159554-10 | 159554-11 | 159554-12 |
| Your Reference | ---------- - | 129 | 103 | 116 | 130 | 114 |
| Depth | ---------- | 0.4 | 2.5-2.95 | 5.5-5.95 | 5.5-5.95 | 5.5-5.95 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | [NA] | 8.7 | 8.4 | 8.2 | 8.3 |
| Electrical Conductivity 1:5 soil:water | µS/cm | [NA] | 110 | 130 | 140 | 200 |
| Chloride, Cl 1:5 soil:water | mg/kg | [NA] | 10 | <10 | <10 | 20 |
| Sulphate, SO4 1:5 soil:water | mg/kg | [NA] | 72 | 83 | 140 | 160 |
| Presence of Coal Tar* | - | Absent | [NA] | [NA] | [NA] | [NA] |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-13 | 159554-14 | 159554-15 | 159554-16 | 159554-17 |
| Your Reference | ---------- - | 116 | 116 | 115 | 115 | 105 |
| Depth | ---------- | 0.4 | 2.0 | 0.3 | 1.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 9.0 | 9.2 | 9.4 | 9.3 | 9.1 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 130 | 45 | 150 | 48 | 61 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-18 | 159554-19 | 159554-20 | 159554-21 | 159554-22 |
| Your Reference | ---------- - | 105 | 109 | 109 | 109 | 110 |
| Depth | ---------- | 1.0 | 0.4 | 1.0 | 3.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 9.2 | 8.7 | 9.2 | 9.1 | 8.7 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 55 | 120 | 52 | 70 | 140 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-23 | 159554-24 | 159554-25 | 159554-26 | 159554-27 |
| Your Reference | ---------- - | 110 | 108 | 108 | 108 | 102 |
| Depth | ---------- | 2.2 | 0.4 | 1.0 | 2.9 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 9.4 | 9.3 | 9.2 | 8.7 | 9.5 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 56 | 160 | 55 | 120 | 48 |

| Misc Inorg - Soil | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-28 | 159554-29 | 159554-30 | 159554-31 | 159554-32 |
| Your Reference | ---------- - | 102 | 102 | 106 | 106 | 104 |
| Depth | ---------- | 1.0 | 2.0 | 0.5 | 1.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 9.4 | 9.0 | 9.3 | 9.3 | 9.4 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 56 | 89 | 63 | 50 | 170 |

| Misc Inorg - Soil | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 | 159554-35 |
| Your Reference | ---------- - | 104 | 117 | 117 |
| Depth | ---------- | 0.55 | 0.4 | 1.0 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date prepared | - | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| Date analysed | - | 28/12/2016 | 28/12/2016 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 9.3 | 8.9 | 8.8 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 71 | 220 | 50 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-1 | 159554-2 | 159554-3 | 159554-4 | 159554-5 |
| Your Reference | ---------- | 123 | 123 | 129 | 129 | 129 |
| | - | | | | | |
| Depth | ---------- | 0.7 | 1.9 | 0.3 | 0.6 | 2.7 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 17 | 2.7 | 7.7 | 2.3 | 17 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-13 | 159554-14 | 159554-15 | 159554-16 | 159554-17 |
| Your Reference | ---------- | 116 | 116 | 115 | 115 | 105 |
| | - | | | | | |
| Depth | ---------- | 0.4 | 2.0 | 0.3 | 1.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 5.8 | 15 | 5.2 | 2.8 | 3.3 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-18 | 159554-19 | 159554-20 | 159554-21 | 159554-22 |
| Your Reference | ---------- | 105 | 109 | 109 | 109 | 110 |
| | - | | | | | |
| Depth | ---------- | 1.0 | 0.4 | 1.0 | 3.0 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 2.2 | 5.1 | 2.5 | 15 | 5.8 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-23 | 159554-24 | 159554-25 | 159554-26 | 159554-27 |
| Your Reference | ---------- | 110 | 108 | 108 | 108 | 102 |
| | - | | | | | |
| Depth | ---------- | 2.2 | 0.4 | 1.0 | 2.9 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 12 | 5.4 | 2.4 | 33 | 6.7 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-28 | 159554-29 | 159554-30 | 159554-31 | 159554-32 |
| Your Reference | ---------- | 102 | 102 | 106 | 106 | 104 |
| | - | | | | | |
| Depth | ---------- | 1.0 | 2.0 | 0.5 | 1.5 | 0.3 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 4.7 | 17 | 1.7 | 2.5 | 5.2 |

| Moisture | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-33 | 159554-34 | 159554-35 | 159554-36 | 159554-37 |
| Your Reference | ---------- | 104 | 117 | 117 | 117 | D14 |
| | - | | | | | |
| Depth | ---------- | 0.55 | 0.4 | 1.0 | 3.0 | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 2.0 | 8.1 | 1.1 | 17 | 4.8 |

| Moisture | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-38 | 159554-39 | 159554-40 |
| Your Reference | ---------- | D15 | D16 | D17 |
| | - | | | |
| Depth | ---------- | - | - | - |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date prepared | - | 21/12/2016 | 21/12/2016 | 21/12/2016 |
| Date analysed | - | 22/12/2016 | 22/12/2016 | 22/12/2016 |
| Moisture | % | 2.6 | 2.7 | 1.9 |

| Asbestos ID - soils NEPM | | |
|---|---|---|
| Our Reference: | UNITS | 159554-7 |
| Your Reference | ---------- - | 128 |
| Depth | ---------- | 0.3 |
| Date Sampled | | 19/12/2016 |
| Type of sample | | soil |
| Date analysed | - | 30/12/2016 |
| Sample mass tested | g | 852.46 |
| Sample Description | - | Brown coarse-grained 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 | – |
| FA and AF Estimation*[#2] | %(w/w) | <0.001 |

| Asbestos ID - materials | | |
|---|---|---|
| Our Reference: | UNITS | 159554-8 |
| Your Reference | ---------- | 128 |
| | - | |
| Depth | ---------- | 0.3 |
| Date Sampled | | 19/12/2016 |
| Type of sample | | material |
| Date analysed | - | 22/12/2016 |
| Mass / Dimension of Sample | - | 50x30x5mm |
| Sample Description | - | Grey compressed fibre cement material |
| Asbestos ID in materials | - | Chrysotile asbestos detected<br>Amosite asbestos detected |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes. |
| Org-014 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>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.<br><br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'TEQ 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.<br>2. 'TEQ 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.<br>3. 'TEQ 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.<br>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-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-005 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>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-008 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. |
| Org-006 | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>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. |

| Method ID | Methodology Summary |
|---|---|
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| Inorg-081 | Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyer. |
| RTA T542 | Determination of Phenol in core samples as per RTA test method T542. This procedure gives and indication of whether a sample of asphalt has been made with coal tar. The coal tar method gives an approximate result with a high degree of uncertainty. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours. |
| 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.<br>Results reported denoted with * are outside our scope of NATA accreditation.<br><br>**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)<br><br>**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.<br><br>Estimation = Estimated asbestos weight<br><br>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques. |
| 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. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 | LCS-10 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 25 | Org-016 | <25 | 159554-1 | <25 \|\| <25 | LCS-10 | 102% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 25 | Org-016 | <25 | 159554-1 | <25 \|\| <25 | LCS-10 | 102% |
| Benzene | mg/kg | 0.2 | Org-016 | <0.2 | 159554-1 | <0.2 \|\| <0.2 | LCS-10 | 120% |
| Toluene | mg/kg | 0.5 | Org-016 | <0.5 | 159554-1 | <0.5 \|\| <0.5 | LCS-10 | 105% |
| Ethylbenzene | mg/kg | 1 | Org-016 | <1 | 159554-1 | <1 \|\| <1 | LCS-10 | 94% |
| m+p-xylene | mg/kg | 2 | Org-016 | <2 | 159554-1 | <2 \|\| <2 | LCS-10 | 95% |
| o-Xylene | mg/kg | 1 | Org-016 | <1 | 159554-1 | <1 \|\| <1 | LCS-10 | 92% |
| naphthalene | mg/kg | 1 | Org-014 | <1 | 159554-1 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | | Org-016 | 81 | 159554-1 | 84 \|\| 81 \|\| RPD: 4 | LCS-10 | 93% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 24/12/2016 | 159554-1 | 23/12/2016 \|\| 23/12/2016 | LCS-10 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 50 | Org-003 | <50 | 159554-1 | <50 \|\| <50 | LCS-10 | 110% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 100 | Org-003 | <100 | 159554-1 | <100 \|\| <100 | LCS-10 | 106% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 100 | Org-003 | <100 | 159554-1 | <100 \|\| <100 | LCS-10 | 117% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 50 | Org-003 | <50 | 159554-1 | <50 \|\| <50 | LCS-10 | 110% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 100 | Org-003 | <100 | 159554-1 | <100 \|\| <100 | LCS-10 | 106% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 100 | Org-003 | <100 | 159554-1 | <100 \|\| <100 | LCS-10 | 117% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 94 | 159554-1 | 95 \|\| 84 \|\| RPD: 12 | LCS-10 | 97% |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 | LCS-10 | 22/12/2016 |
| Naphthalene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 114% |
| Acenaphthylene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | <0.1 \|\| 0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 115% |
| Phenanthrene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.3 \|\| 0.4 \|\| RPD: 29 | LCS-10 | 109% |
| Anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.1 \|\| 0.2 \|\| RPD: 67 | [NR] | [NR] |
| Fluoranthene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 1.1 \|\| 2.2 \|\| RPD: 67 | LCS-10 | 105% |
| Pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 1.0 \|\| 2.1 \|\| RPD: 71 | LCS-10 | 109% |
| Benzo(a)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.4 \|\| 1.0 \|\| RPD: 86 | [NR] | [NR] |
| Chrysene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.4 \|\| 0.9 \|\| RPD: 77 | [NR] | [NR] |
| Benzo(b,j +k)fluoranthene | mg/kg | 0.2 | Org-012 | <0.2 | 159554-1 | 0.6 \|\| 1 \|\| RPD: 50 | [NR] | [NR] |

| QUALITY CONTROL<br><br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 0.05 | Org-012 | <0.05 | 159554-1 | 0.3 \|\| 0.72 \|\| RPD: 82 | LCS-10 | 98% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.2 \|\| 0.4 \|\| RPD: 67 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | <0.1 \|\| 0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | Org-012 | <0.1 | 159554-1 | 0.2 \|\| 0.5 \|\| RPD: 86 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 97 | 159554-1 | 84 \|\| 96 \|\| RPD: 13 | LCS-10 | 115% |

| QUALITY CONTROL<br><br>Organochlorine Pesticides in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 | LCS-10 | 22/12/2016 |
| HCB | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 113% |
| gamma-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 119% |
| delta-BHC | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 116% |
| Heptachlor Epoxide | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 121% |
| gamma-Chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 122% |
| Dieldrin | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 130% |
| Endrin | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 124% |
| pp-DDD | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 126% |
| Endosulfan II | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 100% |
| Methoxychlor | mg/kg | 0.1 | Org-005 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | | Org-005 | 105 | 159554-1 | 101 \|\| 101 \|\| RPD: 0 | LCS-10 | 121% |

| QUALITY CONTROL<br><br>Organophosphorus Pesticides | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 | LCS-10 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 100% |
| Chlorpyriphos-methyl | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 99% |
| Dimethoate | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 97% |
| Fenitrothion | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 103% |
| Malathion | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 85% |
| Parathion | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 100% |
| Ronnel | mg/kg | 0.1 | Org-008 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 109% |
| *Surrogate* TCMX | % | | Org-008 | 105 | 159554-1 | 101 \|\| 101 \|\| RPD: 0 | LCS-10 | 101% |

| QUALITY CONTROL<br><br>PCBs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 | LCS-10 | 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 | LCS-10 | 22/12/2016 |
| Aroclor 1016 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | LCS-10 | 113% |
| Aroclor 1260 | mg/kg | 0.1 | Org-006 | <0.1 | 159554-1 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | | Org-006 | 105 | 159554-1 | 101 \|\| 101 \|\| RPD: 0 | LCS-10 | 101% |

| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD |
|---|---|---|---|---|---|---|
| Date prepared | - | | | 21/12/2016 | 159554-1 | 21/12/2016 \|\| 21/12/2016 |
| Date analysed | - | | | 22/12/2016 | 159554-1 | 22/12/2016 \|\| 22/12/2016 |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | 159554-1 | <4 \|\| <4 |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | 159554-1 | <0.4 \|\| <0.4 |
| Chromium | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 3 \|\| 3 \|\| RPD: 0 |
| Copper | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 7 \|\| 6 \|\| RPD: 15 |
| Lead | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 11 \|\| 6 \|\| RPD: 59 |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | 159554-1 | <0.1 \|\| <0.1 |
| Nickel | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 2 \|\| 3 \|\| RPD: 40 |
| Zinc | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 29 \|\| 25 \|\| RPD: 15 |
| Manganese | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 58 \|\| 38 \|\| RPD: 42 |
| Iron | mg/kg | 1 | Metals-020 | <1 | 159554-1 | 2700 \|\| 2300 \|\| RPD: 16 |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD |
|---|---|---|---|---|---|---|
| Date prepared | - | | | 28/12/2016 | 159554-1 | 28/12/2016 \|\| 28/12/2016 |
| Date analysed | - | | | 28/12/2016 | 159554-1 | 28/12/2016 \|\| 28/12/2016 |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | 159554-1 | 8.6 \|\| 8.8 \|\| RPD: 2 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | 159554-1 | 98 \|\| 99 \|\| RPD: 1 |
| Chloride, Cl 1:5 soil:water | mg/kg | 10 | Inorg-081 | <10 | [NT] | [NT] |
| Sulphate, SO4 1:5 soil:water | mg/kg | 10 | Inorg-081 | <10 | [NT] | [NT] |
| Presence of Coal Tar* | - | | RTA T542 | Absent | [NT] | [NT] |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 | LCS-11 | 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 | LCS-11 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159554-19 | <25 \|\| <25 | LCS-11 | 96% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159554-19 | <25 \|\| <25 | LCS-11 | 96% |
| Benzene | mg/kg | 159554-19 | <0.2 \|\| <0.2 | LCS-11 | 105% |
| Toluene | mg/kg | 159554-19 | <0.5 \|\| <0.5 | LCS-11 | 94% |
| Ethylbenzene | mg/kg | 159554-19 | <1 \|\| <1 | LCS-11 | 99% |
| m+p-xylene | mg/kg | 159554-19 | <2 \|\| <2 | LCS-11 | 92% |
| o-Xylene | mg/kg | 159554-19 | <1 \|\| <1 | LCS-11 | 85% |
| naphthalene | mg/kg | 159554-19 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159554-19 | 87 \|\| 90 \|\| RPD: 3 | LCS-11 | 91% |

| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 | LCS-11 | 21/12/2016 |
| Date analysed | - | 159554-19 | 24/12/2016 \|\| 24/12/2016 | LCS-11 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159554-19 | <50 \|\| <50 | LCS-11 | 121% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159554-19 | <100 \|\| <100 | LCS-11 | 118% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159554-19 | <100 \|\| <100 | LCS-11 | 121% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159554-19 | <50 \|\| <50 | LCS-11 | 121% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159554-19 | <100 \|\| <100 | LCS-11 | 118% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159554-19 | <100 \|\| <100 | LCS-11 | 121% |
| *Surrogate* o-Terphenyl | % | 159554-19 | 90 \|\| 93 \|\| RPD: 3 | LCS-11 | 107% |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 | LCS-11 | 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 | LCS-11 | 22/12/2016 |
| Naphthalene | mg/kg | 159554-19 | <0.1 \|\| <0.1 | LCS-11 | 114% |
| Acenaphthylene | mg/kg | 159554-19 | 0.2 \|\| 0.2 \|\| RPD: 0 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159554-19 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159554-19 | <0.1 \|\| <0.1 | LCS-11 | 118% |
| Phenanthrene | mg/kg | 159554-19 | 0.8 \|\| 0.9 \|\| RPD: 12 | LCS-11 | 108% |
| Anthracene | mg/kg | 159554-19 | 0.3 \|\| 0.2 \|\| RPD: 40 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159554-19 | 3.4 \|\| 2.5 \|\| RPD: 31 | LCS-11 | 109% |
| Pyrene | mg/kg | 159554-19 | 3.2 \|\| 2.4 \|\| RPD: 29 | LCS-11 | 114% |
| Benzo(a)anthracene | mg/kg | 159554-19 | 1.4 \|\| 1.0 \|\| RPD: 33 | [NR] | [NR] |
| Chrysene | mg/kg | 159554-19 | 1.4 \|\| 0.9 \|\| RPD: 43 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159554-19 | 2.2 \|\| 2 \|\| RPD: 10 | [NR] | [NR] |
| Benzo(a)pyrene | mg/kg | 159554-19 | 1.2 \|\| 0.95 \|\| RPD: 23 | LCS-11 | 101% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159554-19 | 0.8 \|\| 0.6 \|\| RPD: 29 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159554-19 | 0.2 \|\| 0.1 \|\| RPD: 67 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159554-19 | 1 \|\| 0.8 \|\| RPD: 22 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159554-19 | 90 \|\| 90 \|\| RPD: 0 | LCS-11 | 120% |

| QUALITY CONTROL Organochlorine Pesticides in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 |
| HCB | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| alpha-BHC | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| gamma-BHC | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| beta-BHC | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Heptachlor | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| delta-BHC | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aldrin | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Heptachlor Epoxide | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| gamma-Chlordane | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| alpha-chlordane | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Endosulfan I | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| pp-DDE | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Dieldrin | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Endrin | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| pp-DDD | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Endosulfan II | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| pp-DDT | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Endrin Aldehyde | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Endosulfan Sulphate | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Methoxychlor | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| *Surrogate* TCMX | % | 159554-19 | 101 \|\| 101 \|\| RPD: 0 |

| QUALITY CONTROL Organophosphorus Pesticides | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Bromophos-ethyl | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Chlorpyriphos | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Chlorpyriphos-methyl | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Diazinon | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Dichlorvos | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Dimethoate | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Ethion | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Fenitrothion | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Malathion | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Parathion | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Ronnel | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| *Surrogate* TCMX | % | 159554-19 | 101 \|\| 101 \|\| RPD: 0 |
| QUALITY CONTROL PCBs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
| Date extracted | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 |
| Aroclor 1016 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1221 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1232 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1242 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1248 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1254 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Aroclor 1260 | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| *Surrogate* TCLMX | % | 159554-19 | 101 \|\| 101 \|\| RPD: 0 |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
| Date prepared | - | 159554-19 | 21/12/2016 \|\| 21/12/2016 |
| Date analysed | - | 159554-19 | 22/12/2016 \|\| 22/12/2016 |
| Arsenic | mg/kg | 159554-19 | 6 \|\| 5 \|\| RPD: 18 |
| Cadmium | mg/kg | 159554-19 | 1 \|\| 0.7 \|\| RPD: 35 |
| Chromium | mg/kg | 159554-19 | 10 \|\| 19 \|\| RPD: 62 |
| Copper | mg/kg | 159554-19 | 43 \|\| 37 \|\| RPD: 15 |
| Lead | mg/kg | 159554-19 | 89 \|\| 54 \|\| RPD: 49 |
| Mercury | mg/kg | 159554-19 | <0.1 \|\| <0.1 |
| Nickel | mg/kg | 159554-19 | 8 \|\| 13 \|\| RPD: 48 |
| Zinc | mg/kg | 159554-19 | 220 \|\| 140 \|\| RPD: 44 |
| Manganese | mg/kg | 159554-19 | 300 \|\| 470 \|\| RPD: 44 |

| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD |
|---|---|---|---|
| Iron | mg/kg | 159554-19 | 12000 \|\| 16000 \|\| RPD: 29 |

| QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159554-28 | <25 \|\| <25 | 159554-3 | 95% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159554-28 | <25 \|\| <25 | 159554-3 | 95% |
| Benzene | mg/kg | 159554-28 | <0.2 \|\| <0.2 | 159554-3 | 109% |
| Toluene | mg/kg | 159554-28 | <0.5 \|\| <0.5 | 159554-3 | 97% |
| Ethylbenzene | mg/kg | 159554-28 | <1 \|\| <1 | 159554-3 | 89% |
| m+p-xylene | mg/kg | 159554-28 | <2 \|\| <2 | 159554-3 | 90% |
| o-Xylene | mg/kg | 159554-28 | <1 \|\| <1 | 159554-3 | 85% |
| naphthalene | mg/kg | 159554-28 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159554-28 | 88 \|\| 89 \|\| RPD: 1 | 159554-3 | 78% |

| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 24/12/2016 \|\| 24/12/2016 | 159554-3 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159554-28 | <50 \|\| <50 | 159554-3 | 113% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159554-28 | <100 \|\| <100 | 159554-3 | 112% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159554-28 | <100 \|\| <100 | 159554-3 | 101% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159554-28 | <50 \|\| <50 | 159554-3 | 113% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159554-28 | <100 \|\| <100 | 159554-3 | 112% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159554-28 | <100 \|\| <100 | 159554-3 | 101% |
| *Surrogate* o-Terphenyl | % | 159554-28 | 89 \|\| 93 \|\| RPD: 4 | 159554-3 | 102% |

| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| Naphthalene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 108% |
| Acenaphthylene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 106% |
| Phenanthrene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 119% |
| Anthracene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | # |
| Pyrene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | # |
| Benzo(a)anthracene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chrysene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159554-28 | <0.2 \|\| <0.2 | [NR] | [NR] |

| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 159554-28 | <0.05 \|\| <0.05 | 159554-3 | 117% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159554-28 | 87 \|\| 90 \|\| RPD: 3 | 159554-3 | 111% |
| QUALITY CONTROL Organochlorine Pesticides in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| HCB | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-BHC | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 114% |
| gamma-BHC | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| beta-BHC | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Heptachlor | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 120% |
| delta-BHC | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aldrin | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 116% |
| Heptachlor Epoxide | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 121% |
| gamma-Chlordane | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| alpha-chlordane | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan I | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDE | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 123% |
| Dieldrin | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 130% |
| Endrin | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 127% |
| pp-DDD | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 128% |
| Endosulfan II | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| pp-DDT | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endrin Aldehyde | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Endosulfan Sulphate | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 99% |
| Methoxychlor | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCMX | % | 159554-28 | 103 \|\| 101 \|\| RPD: 2 | 159554-3 | 123% |

| QUALITY CONTROL Organophosphorus Pesticides | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| Azinphos-methyl (Guthion) | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Bromophos-ethyl | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chlorpyriphos | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 88% |
| Chlorpyriphos-methyl | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Diazinon | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Dichlorvos | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 74% |
| Dimethoate | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Ethion | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 107% |
| Fenitrothion | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 72% |
| Malathion | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 91% |
| Parathion | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 94% |
| Ronnel | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 107% |
| *Surrogate* TCMX | % | 159554-28 | 103 \|\| 101 \|\| RPD: 2 | 159554-3 | 100% |
| QUALITY CONTROL PCBs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| Aroclor 1016 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1221 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1232 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1242 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1248 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Aroclor 1254 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 109% |
| Aroclor 1260 | mg/kg | 159554-28 | <0.1 \|\| <0.1 | [NR] | [NR] |
| *Surrogate* TCLMX | % | 159554-28 | 103 \|\| 101 \|\| RPD: 2 | 159554-3 | 100% |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | 159554-28 | 21/12/2016 \|\| 21/12/2016 | 159554-3 | 21/12/2016 |
| Date analysed | - | 159554-28 | 22/12/2016 \|\| 22/12/2016 | 159554-3 | 22/12/2016 |
| Arsenic | mg/kg | 159554-28 | <4 \|\| <4 | 159554-3 | 96% |
| Cadmium | mg/kg | 159554-28 | <0.4 \|\| <0.4 | 159554-3 | 84% |
| Chromium | mg/kg | 159554-28 | 1 \|\| 3 \|\| RPD: 100 | 159554-3 | 94% |
| Copper | mg/kg | 159554-28 | 1 \|\| 2 \|\| RPD: 67 | 159554-3 | 121% |
| Lead | mg/kg | 159554-28 | 2 \|\| 4 \|\| RPD: 67 | 159554-3 | 124% |
| Mercury | mg/kg | 159554-28 | <0.1 \|\| <0.1 | 159554-3 | 101% |
| Nickel | mg/kg | 159554-28 | 1 \|\| 2 \|\| RPD: 67 | 159554-3 | 87% |
| Zinc | mg/kg | 159554-28 | 7 \|\| 23 \|\| RPD: 107 | 159554-3 | 120% |
| Manganese | mg/kg | 159554-28 | 18 \|\| 26 \|\| RPD: 36 | 159554-3 | # |

| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Iron | mg/kg | 159554-28 | 1400 \|\| 2100 \|\| RPD: 40 | 159554-3 | # |
| QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-38 | 21/12/2016 \|\| 21/12/2016 | 159554-30 | 21/12/2016 |
| Date analysed | - | 159554-38 | 22/12/2016 \|\| 23/12/2016 | 159554-30 | 22/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 159554-38 | <25 \|\| <25 | 159554-30 | 115% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 159554-38 | <25 \|\| <25 | 159554-30 | 115% |
| Benzene | mg/kg | 159554-38 | <0.2 \|\| <0.2 | 159554-30 | 121% |
| Toluene | mg/kg | 159554-38 | <0.5 \|\| <0.5 | 159554-30 | 123% |
| Ethylbenzene | mg/kg | 159554-38 | <1 \|\| <1 | 159554-30 | 105% |
| m+p-xylene | mg/kg | 159554-38 | <2 \|\| <2 | 159554-30 | 114% |
| o-Xylene | mg/kg | 159554-38 | <1 \|\| <1 | 159554-30 | 110% |
| naphthalene | mg/kg | 159554-38 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | 159554-38 | 90 \|\| 89 \|\| RPD: 1 | 159554-30 | 94% |
| QUALITY CONTROL svTRH (C10-C40) in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-38 | 21/12/2016 \|\| 21/12/2016 | 159554-30 | 21/12/2016 |
| Date analysed | - | 159554-38 | 24/12/2016 \|\| 24/12/2016 | 159554-30 | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 159554-38 | <50 \|\| <50 | 159554-30 | 108% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 159554-38 | <100 \|\| <100 | 159554-30 | 106% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 159554-38 | <100 \|\| <100 | 159554-30 | 74% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 159554-38 | <50 \|\| <50 | 159554-30 | 108% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 159554-38 | <100 \|\| <100 | 159554-30 | 106% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 159554-38 | <100 \|\| <100 | 159554-30 | 74% |
| *Surrogate* o-Terphenyl | % | 159554-38 | 91 \|\| 91 \|\| RPD: 0 | 159554-30 | 97% |
| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | 159554-38 | 21/12/2016 \|\| 21/12/2016 | 159554-30 | 21/12/2016 |
| Date analysed | - | 159554-38 | 22/12/2016 \|\| 22/12/2016 | 159554-30 | 22/12/2016 |
| Naphthalene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | 159554-30 | 103% |
| Acenaphthylene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Acenaphthene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluorene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | 159554-30 | 102% |
| Phenanthrene | mg/kg | 159554-38 | <0.1 \|\| 0.2 | 159554-30 | 89% |
| Anthracene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Fluoranthene | mg/kg | 159554-38 | <0.1 \|\| 0.4 | 159554-30 | 85% |
| Pyrene | mg/kg | 159554-38 | <0.1 \|\| 0.4 | 159554-30 | 93% |
| Benzo(a)anthracene | mg/kg | 159554-38 | <0.1 \|\| 0.2 | [NR] | [NR] |
| Chrysene | mg/kg | 159554-38 | <0.1 \|\| 0.2 | [NR] | [NR] |
| Benzo(b,j+k)fluoranthene | mg/kg | 159554-38 | <0.2 \|\| 0.3 | [NR] | [NR] |

| QUALITY CONTROL PAHs in Soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 159554-38 | <0.05 \|\| 0.1 | 159554-30 | 87% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 159554-38 | <0.1 \|\| 0.1 | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 159554-38 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 159554-38 | <0.1 \|\| 0.1 | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | 159554-38 | 92 \|\| 89 \|\| RPD: 3 | 159554-30 | 109% |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | 159554-38 | 21/12/2016 \|\| 21/12/2016 | 159554-30 | 21/12/2016 |
| Date analysed | - | 159554-38 | 22/12/2016 \|\| 22/12/2016 | 159554-30 | 22/12/2016 |
| Arsenic | mg/kg | 159554-38 | <4 \|\| <4 | 159554-30 | 108% |
| Cadmium | mg/kg | 159554-38 | <0.4 \|\| <0.4 | 159554-30 | 94% |
| Chromium | mg/kg | 159554-38 | 1 \|\| 2 \|\| RPD: 67 | 159554-30 | 102% |
| Copper | mg/kg | 159554-38 | 1 \|\| 3 \|\| RPD: 100 | 159554-30 | 110% |
| Lead | mg/kg | 159554-38 | 2 \|\| 6 \|\| RPD: 100 | 159554-30 | 97% |
| Mercury | mg/kg | 159554-38 | <0.1 \|\| <0.1 | 159554-30 | 99% |
| Nickel | mg/kg | 159554-38 | <1 \|\| 2 | 159554-30 | 97% |
| Zinc | mg/kg | 159554-38 | 8 \|\| 67 \|\| RPD: 157 | 159554-30 | 86% |
| Manganese | mg/kg | 159554-38 | 11 \|\| 22 \|\| RPD: 67 | 159554-30 | 87% |
| Iron | mg/kg | 159554-38 | 1200 \|\| 1600 \|\| RPD: 29 | 159554-30 | # |
| QUALITY CONTROL Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | [NT] | [NT] | LCS-1 | 21/12/2016 |
| Date analysed | - | [NT] | [NT] | LCS-1 | 22/12/2016 |
| Arsenic | mg/kg | [NT] | [NT] | LCS-1 | 111% |
| Cadmium | mg/kg | [NT] | [NT] | LCS-1 | 96% |
| Chromium | mg/kg | [NT] | [NT] | LCS-1 | 107% |
| Copper | mg/kg | [NT] | [NT] | LCS-1 | 106% |
| Lead | mg/kg | [NT] | [NT] | LCS-1 | 103% |
| Mercury | mg/kg | [NT] | [NT] | LCS-1 | 100% |
| Nickel | mg/kg | [NT] | [NT] | LCS-1 | 98% |
| Zinc | mg/kg | [NT] | [NT] | LCS-1 | 99% |
| Manganese | mg/kg | [NT] | [NT] | LCS-1 | 100% |
| Iron | mg/kg | [NT] | [NT] | LCS-1 | 103% |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | 159554-12 | 28/12/2016 \|\| 28/12/2016 | LCS-1 | 28/12/2016 |
| Date analysed | - | 159554-12 | 28/12/2016 \|\| 28/12/2016 | LCS-1 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 159554-12 | 8.3 \|\| 8.3 \|\| RPD: 0 | LCS-1 | 101% |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159554-12 | 200 \|\| 190 \|\| RPD: 5 | LCS-1 | 103% |
| Chloride, Cl 1:5 soil:water | mg/kg | 159554-12 | 20 \|\| 20 \|\| RPD: 0 | LCS-1 | 94% |
| Sulphate, SO4 1:5 soil:water | mg/kg | 159554-12 | 160 \|\| 150 \|\| RPD: 6 | LCS-1 | 104% |
| Presence of Coal Tar* | - | [NT] | [NT] | LCS-1 | Present |
| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | [NT] | [NT] | LCS-2 | 21/12/2016 |
| Date analysed | - | [NT] | [NT] | LCS-2 | 22/12/2016 |
| Arsenic | mg/kg | [NT] | [NT] | LCS-2 | 110% |
| Cadmium | mg/kg | [NT] | [NT] | LCS-2 | 96% |
| Chromium | mg/kg | [NT] | [NT] | LCS-2 | 107% |
| Copper | mg/kg | [NT] | [NT] | LCS-2 | 104% |
| Lead | mg/kg | [NT] | [NT] | LCS-2 | 104% |
| Mercury | mg/kg | [NT] | [NT] | LCS-2 | 96% |
| Nickel | mg/kg | [NT] | [NT] | LCS-2 | 98% |
| Zinc | mg/kg | [NT] | [NT] | LCS-2 | 99% |
| Manganese | mg/kg | [NT] | [NT] | LCS-2 | 102% |
| Iron | mg/kg | [NT] | [NT] | LCS-2 | 106% |
| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | 159554-23 | 28/12/2016 \|\| 28/12/2016 | LCS-2 | 28/12/2016 |
| Date analysed | - | 159554-23 | 28/12/2016 \|\| 28/12/2016 | LCS-2 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 159554-23 | 9.4 \|\| 9.2 \|\| RPD: 2 | LCS-2 | 102% |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159554-23 | 56 \|\| 56 \|\| RPD: 0 | LCS-2 | 101% |
| Chloride, Cl 1:5 soil:water | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Sulphate, SO4 1:5 soil:water | mg/kg | [NT] | [NT] | [NR] | [NR] |
| Presence of Coal Tar* | - | [NT] | [NT] | [NR] | [NR] |

| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159554-33 | 28/12/2016 \|\| 28/12/2016 |
| Date analysed | - | 159554-33 | 28/12/2016 \|\| 28/12/2016 |
| pH 1:5 soil:water | pH Units | 159554-33 | 9.3 \|\| 9.3 \|\| RPD: 0 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 159554-33 | 71 \|\| 74 \|\| RPD: 4 |
| Chloride, Cl 1:5 soil:water | mg/kg | [NT] | [NT] |
| Sulphate, SO4 1:5 soil:water | mg/kg | [NT] | [NT] |
| Presence of Coal Tar* | - | [NT] | [NT] |

**Report Comments:**

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159554-1 for Pb. Therefore a triplicate result has been issued as laboratory sample number 159554-43.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159554-19 for Cr. Therefore a triplicate result has been issued as laboratory sample number 159554-44.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159554-28 for Zn. Therefore a triplicate result has been issued as laboratory sample number 159554-45.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 159554-38 for Zn and Mn. Therefore a triplicate result has been issued as laboratory sample number 159554-46.

Acid Extractable 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

PAH_S:
The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.
# Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

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.

Asbestos ID was analysed by Approved Identifier: Lucy Zhu
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NR: Test not required
<: Less than
PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than
NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159554-A

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | |
|---|---|
| Your Reference: | **91034, Newcastle** |
| No. of samples: | Additional testing |
| Date samples received / completed instructions received | 21/12/16 / 03/01/17 |

**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: / Issue Date: | 10/01/17 / 10/01/17 |
| Date of Preliminary Report: | Not Issued |

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

**Results Approved By:**

David Springer
General Manager

| Metals in TCLP USEPA1311 | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-A-3 | 159554-A-19 | 159554-A-22 | 159554-A-34 |
| Your Reference | ---------- | 129 | 109 | 110 | 117 |
| | - | | | | |
| Depth | ---------- | 0.3 | 0.4 | 0.4 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date extracted | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| Date analysed | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| pH of soil for fluid# determ. | pH units | 8.8 | 9.2 | 8.9 | 9.3 |
| pH of soil TCLP (after HCl) | pH units | 1.6 | 1.6 | 1.6 | 1.6 |
| Extraction fluid used | - | 1 | 1 | 1 | 1 |
| pH of final Leachate | pH units | 5.5 | 5.6 | 5.9 | 5.9 |
| Lead in TCLP | mg/L | 0.03 | [NA] | [NA] | <0.03 |

| PAHs in TCLP (USEPA 1311) | | | | | |
|---|---|---|---|---|---|
| Our Reference: | UNITS | 159554-A-3 | 159554-A-19 | 159554-A-22 | 159554-A-34 |
| Your Reference | ---------- | 129 | 109 | 110 | 117 |
| Depth | ---------- | 0.3 | 0.4 | 0.4 | 0.4 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil | soil |
| Date extracted | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| Date analysed | - | 06/01/2017 | 06/01/2017 | 06/01/2017 | 06/01/2017 |
| Naphthalene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | 0.001 |
| Acenaphthylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Acenaphthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | 0.001 |
| Fluorene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Phenanthrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | 0.002 |
| Anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Fluoranthene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(a)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Chrysene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(bjk)fluoranthene in TCLP | mg/L | <0.002 | <0.002 | <0.002 | <0.002 |
| Benzo(a)pyrene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Indeno(1,2,3-c,d)pyrene - TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Dibenzo(a,h)anthracene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Benzo(g,h,i)perylene in TCLP | mg/L | <0.001 | <0.001 | <0.001 | <0.001 |
| Total +ve PAH's | mg/L | NIL (+)VE | NIL (+)VE | NIL (+)VE | 0.0040 |
| *Surrogate p*-Terphenyl-d14 | % | 88 | 83 | 82 | 83 |

| Metals-ASLP Neutral (ICP-MS) | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-A-19 | 159554-A-34 | 159554-A-35 |
| Your Reference | ---------- | 109 | 117 | 117 |
| | - | | | |
| Depth | ---------- | 0.4 | 0.4 | 1.0 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 9.5 | 10.0 | 9.7 |
| Arsenic in ASLP | µg/L | 7 | 9 | 1 |
| Cadmium in ASLP | µg/L | 0.2 | 0.4 | 0.1 |
| Chromium in ASLP | µg/L | 2 | 2 | <1 |
| Copper in ASLP | µg/L | 10 | 39 | 4 |
| Lead in ASLP | µg/L | 19 | 27 | 4 |
| Mercury in ASLP | µg/L | 0.08 | <0.05 | <0.05 |
| Nickel in ASLP | µg/L | 2 | 2 | <1 |
| Zinc in ASLP | µg/L | 66 | 48 | 22 |
| Manganese in ASLP | µg/L | 30 | 40 | 5 |
| Beryllium in ASLP | µg/L | <0.5 | <0.5 | <0.5 |
| Boron in ASLP | µg/L | 30 | 51 | <20 |
| Molybdenum in ASLP | µg/L | 1 | 2 | <1 |
| Selenium in ASLP | µg/L | <1 | <1 | <1 |

| sTRH in water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br><br><br> | 159554-A-19<br>109<br><br>0.4<br>19/12/2016<br>soil | 159554-A-34<br>117<br><br>0.4<br>19/12/2016<br>soil | 159554-A-35<br>117<br><br>1.0<br>19/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| $TRHC_{10}$ - $C_{14}$ | µg/L | <50 | <50 | <50 |
| $TRHC_{15}$ - $C_{28}$ | µg/L | <100 | <100 | <100 |
| $TRHC_{29}$ - $C_{36}$ | µg/L | <100 | <100 | <100 |
| $TRH{>}C_{10}$ - $C_{16}$ | µg/L | <50 | <50 | <50 |
| $TRH{>}C_{16}$ - $C_{34}$ | µg/L | <100 | <100 | <100 |
| $TRH{>}C_{34}$ - $C_{40}$ | µg/L | <100 | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 108 | 118 | 105 |

| PAHs - ASLP Trace Level<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br>-<br>- | 159554-A-19<br>109<br><br>0.4<br>19/12/2016<br>soil | 159554-A-34<br>117<br><br>0.4<br>19/12/2016<br>soil | 159554-A-35<br>117<br><br>1.0<br>19/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | 0.88 | 0.02 |
| Acenaphthylene | µg/L | <0.01 | <0.01 | <0.01 |
| Acenaphthene | µg/L | <0.01 | 0.65 | 0.01 |
| Fluorene | µg/L | 0.01 | 0.29 | 0.01 |
| Phenanthrene | µg/L | 0.11 | 1.3 | 0.11 |
| Anthracene | µg/L | 0.02 | 0.18 | 0.02 |
| Fluoranthene | µg/L | 0.09 | 0.47 | 0.04 |
| Pyrene | µg/L | 0.10 | 0.41 | 0.03 |
| Benzo(a)anthracene | µg/L | 0.03 | 0.07 | <0.01 |
| Chrysene | µg/L | 0.04 | 0.07 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | 0.04 | 0.07 | <0.02 |
| Benzo(a)pyrene | µg/L | 0.02 | 0.04 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | 0.02 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | 0.01 | 0.02 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.50 | 4.4 | 0.24 |
| *Surrogate p*-Terphenyl-d14 | % | 83 | 83 | 88 |

| Metals-ASLP Sea Water (ICP-MS) | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-A-19 | 159554-A-34 | 159554-A-35 |
| Your Reference | ---------- | 109 | 117 | 117 |
| | - | | | |
| Depth | ---------- | 0.4 | 0.4 | 1.0 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 04/01/2017 | 04/01/2017 | 04/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| pH of final Leachate | pH units | 7.8 | 8.5 | 7.9 |
| Arsenic in ASLP Sea Water | µg/L | 4 | 4 | 2 |
| Cadmium in ASLP Sea Water | µg/L | 5.9 | 2.5 | 1.2 |
| Chromium in ASLP Sea Water | µg/L | <1 | 2 | <1 |
| Copper in ASLP Sea Water | µg/L | 4 | 15 | 4 |
| Lead in ASLP Sea Water | µg/L | <1 | 1 | 1 |
| Mercury in ASLP Sea Water | µg/L | <0.05 | <0.05 | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 2 | 2 | 1 |
| Zinc in ASLP Sea Water | µg/L | 44 | 7 | 71 |
| Manganese in ASLP Sea Water | µg/L | 5 | 360 | 63 |
| Beryllium in ASLP Sea Water | µg/L | <0.5 | <0.5 | <0.5 |
| Boron in ASLP Sea Water | µg/L | 4,700 | 4,400 | 4,600 |
| Molybdenum in ASLP Sea Water | µg/L | 13 | 14 | 11 |
| Selenium in ASLP Sea Water | µg/L | <1 | <1 | <1 |

| sTRH in sea water leach<br>Our Reference:<br>Your Reference<br><br>Depth<br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br>-<br>- | 159554-A-19<br>109<br><br>0.4<br>19/12/2016<br>soil | 159554-A-34<br>117<br><br>0.4<br>19/12/2016<br>soil | 159554-A-35<br>117<br><br>1.0<br>19/12/2016<br>soil |
|---|---|---|---|---|
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 |
| TRHC$_{29}$ - C$_{36}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | <50 | <50 | <50 |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | <100 | <100 | <100 |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | <100 | <100 | <100 |
| *Surrogate* o-Terphenyl | % | 115 | 110 | 110 |

| PAHs - ASLP Sea Water Trace Level | | | | |
|---|---|---|---|---|
| Our Reference: | UNITS | 159554-A-19 | 159554-A-34 | 159554-A-35 |
| Your Reference | ---------- - | 109 | 117 | 117 |
| Depth | ---------- | 0.4 | 0.4 | 1.0 |
| Date Sampled | | 19/12/2016 | 19/12/2016 | 19/12/2016 |
| Type of sample | | soil | soil | soil |
| Date extracted | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Date analysed | - | 05/01/2017 | 05/01/2017 | 05/01/2017 |
| Naphthalene | µg/L | 0.03 | 0.93 | <0.02 |
| Acenaphthylene | µg/L | <0.01 | 0.01 | <0.01 |
| Acenaphthene | µg/L | <0.01 | 0.67 | <0.01 |
| Fluorene | µg/L | 0.01 | 0.31 | <0.01 |
| Phenanthrene | µg/L | 0.10 | 1.1 | 0.06 |
| Anthracene | µg/L | 0.01 | 0.20 | <0.01 |
| Fluoranthene | µg/L | 0.02 | 0.26 | 0.01 |
| Pyrene | µg/L | 0.02 | 0.18 | 0.01 |
| Benzo(a)anthracene | µg/L | <0.01 | <0.01 | <0.01 |
| Chrysene | µg/L | <0.01 | 0.01 | <0.01 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.02 | <0.02 | <0.02 |
| Benzo(a)pyrene | µg/L | <0.01 | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | µg/L | <0.01 | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.01 | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | µg/L | <0.01 | <0.01 | <0.01 |
| Benzo(a)pyrene TEQ | µg/L | <0.05 | <0.05 | <0.05 |
| Total +ve PAH's | µg/L | 0.19 | 3.7 | 0.080 |
| *Surrogate p*-Terphenyl-d14 | % | 83 | 71 | 69 |

| Method ID | Methodology Summary |
|---|---|
| Inorg-004 | Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. |
| EXTRACT.7 | Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Metals-020 ICP-AES | Determination of various metals by ICP-AES. |
| Org-012 | Leachates are extracted with Dichloromethane and analysed by GC-MS. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Org-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997. |
| Metals-021 ASLP | Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003_NEUTRAL | Leachates are extracted with Dichloromethane and analysed by GC-FID. |

| QUALITY CONTROL<br>Metals in TCLP<br>USEPA1311 | UNITS | PQL | METHOD | Blank |
|---|---|---|---|---|
| Date extracted | - | | | 06/01/2017 |
| Date analysed | - | | | 06/01/2017 |
| Lead in TCLP | mg/L | 0.03 | Metals-020 ICP-AES | <0.03 |

| QUALITY CONTROL<br>PAHs in TCLP (USEPA 1311) | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 06/01/2017 | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Date analysed | - | | | 06/01/2017 | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Naphthalene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 106% |
| Acenaphthylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluorene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 85% |
| Phenanthrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 85% |
| Anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 94% |
| Pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 87% |
| Benzo(a)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Chrysene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | LCS-W1 | 89% |
| Benzo(bjk)fluoranthene in TCLP | mg/L | 0.002 | Org-012 | <0.002 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene -TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene in TCLP | mg/L | 0.001 | Org-012 | <0.001 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 89 | [NT] | [NT] | LCS-W1 | 92% |

| QUALITY CONTROL Metals-ASLP Neutral (ICP-MS) | UNITS | PQL | METHOD | Blank |
|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 |
| Arsenic in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Cadmium in ASLP | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 |
| Chromium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Copper in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Lead in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Mercury in ASLP | µg/L | 0.05 | Metals-021 ASLP | <0.05 |
| Nickel in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Zinc in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Manganese in ASLP | µg/L | 5 | Metals-022 ICP-MS | <5 |
| Beryllium in ASLP | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 |
| Boron in ASLP | µg/L | 20 | Metals-022 ICP-MS | <20 |
| Molybdenum in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Selenium in ASLP | µg/L | 1 | Metals-022 ICP-MS | <1 |

| QUALITY CONTROL<br>sTRH in water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| TRH $C_{10}$ - $C_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W3 | 79% |
| TRH $C_{15}$ - $C_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 115% |
| TRH $C_{29}$ - $C_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 97% |
| TRH>$C_{10}$ - $C_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W3 | 79% |
| TRH>$C_{16}$ - $C_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 115% |
| TRH>$C_{34}$ - $C_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 114 | [NT] | [NT] | LCS-W3 | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W3 | 106% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 85% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 85% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 94% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 87% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 89% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 89 | [NT] | [NT] | LCS-W3 | 92% |

| QUALITY CONTROL Metals-ASLP Sea Water (ICP-MS) | UNITS | PQL | METHOD | Blank |
|---|---|---|---|---|
| Date extracted | - | | | 04/01/2017 |
| Date analysed | - | | | 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Cadmium in ASLP Sea Water | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 |
| Chromium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Copper in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Lead in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Mercury in ASLP Sea Water | µg/L | 0.05 | Metals-021 ASLP | <0.05 |
| Nickel in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Zinc in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Manganese in ASLP Sea Water | µg/L | 5 | Metals-022 ICP-MS | <5 |
| Beryllium in ASLP Sea Water | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 |
| Boron in ASLP Sea Water | µg/L | 20 | Metals-022 ICP-MS | <20 |
| Molybdenum in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |
| Selenium in ASLP Sea Water | µg/L | 1 | Metals-022 ICP-MS | <1 |

| QUALITY CONTROL<br>sTRH in sea water leach | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W3 | 79% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 115% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 97% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W3 | 79% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 115% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W3 | 97% |
| *Surrogate* o-Terphenyl | % | | Org-003_NEUTRAL | 114 | [NT] | [NT] | LCS-W3 | 74% |

| QUALITY CONTROL<br>PAHs - ASLP Sea Water Trace Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Date analysed | - | | | 05/01/2017 | [NT] | [NT] | LCS-W3 | 05/01/2017 |
| Naphthalene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | LCS-W3 | 120% |
| Acenaphthylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 122% |
| Phenanthrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 126% |
| Anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 70% |
| Pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 89% |
| Benzo(a)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 73% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.02 | Org-012 | <0.02 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | LCS-W3 | 70% |
| Dibenzo(a,h)anthracene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.01 | Org-012 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 78 | [NT] | [NT] | LCS-W3 | 86% |

| QUALITY CONTROL<br>Metals in TCLP USEPA1311 | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Date analysed | - | [NT] | [NT] | LCS-W1 | 06/01/2017 |
| Lead in TCLP | mg/L | [NT] | [NT] | LCS-W1 | 96% |

| QUALITY CONTROL Metals-ASLP Neutral (ICP-MS) | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date extracted | - | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 98% |
| Cadmium in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 99% |
| Chromium in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 94% |
| Copper in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 91% |
| Lead in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 98% |
| Mercury in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 90% |
| Nickel in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 93% |
| Zinc in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 99% |
| Manganese in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 93% |
| Beryllium in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 90% |
| Boron in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 93% |
| Molybdenum in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 94% |
| Selenium in ASLP | µg/L | [NT] | [NT] | LCS-W1 | 95% |
| QUALITY CONTROL Metals-ASLP Sea Water (ICP-MS) | UNITS | Dup. Sm# | Duplicate Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
| Date extracted | - | [NT] | [NT] | LCS-W1 | 04/01/2017 |
| Date analysed | - | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Arsenic in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 92% |
| Cadmium in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 97% |
| Chromium in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 89% |
| Copper in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 88% |
| Lead in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 97% |
| Mercury in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 89% |
| Nickel in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 88% |
| Zinc in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 89% |
| Manganese in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 87% |
| Beryllium in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 83% |
| Boron in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 96% |
| Molybdenum in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 93% |
| Selenium in ASLP Sea Water | µg/L | [NT] | [NT] | LCS-W1 | 91% |

**Report Comments:**

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159640

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski, Matthew Blackert

**Sample log in details:**

| | | | |
|---|---|---|---|
| Your Reference: | **91034, Newcastle** | | |
| No. of samples: | 4 soils 2 material | | |
| Date samples received / completed instructions received | 22/12/16 | / | 22/12/16 |

**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: / Issue Date: | 6/01/17 | / | 5/01/17 |
| Date of Preliminary Report: | Not Issued | | |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Soil | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- - | 112 |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 22/12/2016 |
| Date analysed | - | 23/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | <25 |
| TRHC$_6$ - C$_{10}$ | mg/kg | <25 |
| vTPHC$_6$ - C$_{10}$ less BTEX (F1) | mg/kg | <25 |
| Benzene | mg/kg | <0.2 |
| Toluene | mg/kg | <0.5 |
| Ethylbenzene | mg/kg | <1 |
| m+p-xylene | mg/kg | <2 |
| o-Xylene | mg/kg | <1 |
| Total +ve Xylenes | mg/kg | <1 |
| naphthalene | mg/kg | <1 |
| *Surrogate* aaa-Trifluorotoluene | % | 83 |

| svTRH (C10-C40) in Soil | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- | 112 |
| | - | |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 22/12/2016 |
| Date analysed | - | 24/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | <50 |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | <100 |
| TRHC$_{29}$ - 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 | % | 88 |

| PAHs in Soil | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- | 112 |
| | - | |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date extracted | - | 22/12/2016 |
| Date analysed | - | 23/12/2016 |
| Naphthalene | mg/kg | 0.1 |
| Acenaphthylene | mg/kg | 0.1 |
| Acenaphthene | mg/kg | 0.1 |
| Fluorene | mg/kg | 0.1 |
| Phenanthrene | mg/kg | 2.4 |
| Anthracene | mg/kg | 0.4 |
| Fluoranthene | mg/kg | 5.7 |
| Pyrene | mg/kg | 5.4 |
| Benzo(a)anthracene | mg/kg | 2.3 |
| Chrysene | mg/kg | 2.1 |
| Benzo(b,j+k)fluoranthene | mg/kg | 4.4 |
| Benzo(a)pyrene | mg/kg | 2.6 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 1.6 |
| Dibenzo(a,h)anthracene | mg/kg | 0.2 |
| Benzo(g,h,i)perylene | mg/kg | 1.5 |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 3.7 |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 3.7 |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 3.7 |
| Total +ve PAH's | mg/kg | 29 |
| *Surrogate p*-Terphenyl-d14 | % | 79 |

| Acid Extractable metals in soil | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- | 112 |
| | - | |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date prepared | - | 22/12/2016 |
| Date analysed | - | 22/12/2016 |
| Arsenic | mg/kg | 7 |
| Cadmium | mg/kg | 2 |
| Chromium | mg/kg | 13 |
| Copper | mg/kg | 99 |
| Lead | mg/kg | 140 |
| Mercury | mg/kg | 0.1 |
| Nickel | mg/kg | 11 |
| Zinc | mg/kg | 440 |
| Manganese | mg/kg | 500 |
| Iron | mg/kg | 12,000 |

| Misc Inorg - Soil | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- - | 112 |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date prepared | - | 28/12/2016 |
| Date analysed | - | 28/12/2016 |
| pH 1:5 soil:water | pH Units | 7.4 |
| Electrical Conductivity 1:5 soil:water | µS/cm | 120 |

| Moisture | | |
|---|---|---|
| Our Reference: | UNITS | 159640-2 |
| Your Reference | ---------- | 112 |
| | - | |
| Depth | ---------- | 0.4 |
| Date Sampled | | 20/12/2016 |
| Type of sample | | soil |
| Date prepared | - | 22/12/2016 |
| Date analysed | - | 23/12/2016 |
| Moisture | % | 10 |

| Asbestos ID - soils NEPM | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159640-3 | 159640-5 |
| Your Reference | ---------- - | 101 | 110 |
| Depth | ---------- | 0.3 | 0.4 |
| Date Sampled | | 19/12/2016 | 20/12/2016 |
| Type of sample | | soil | soil |
| Date analysed | - | 3/01/2017 | 3/01/2017 |
| Sample mass tested | g | 674.64 | 626.07 |
| Sample Description | - | Grey sandy soil | Grey sandy soil |
| 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 |
| Trace Analysis | - | No asbestos detected | No asbestos detected |
| Total Asbestos[#1] | g/kg | <0.1 | <0.1 |
| Asbestos ID in soil <0.1g/kg* | - | No visible asbestos detected | No visible asbestos detected |
| ACM >7mm Estimation* | g | – | – |
| FA and AF Estimation* | g | – | – |
| FA and AF Estimation*[#2] | %(w/w) | <0.001 | <0.001 |

| Asbestos ID - materials | | | |
|---|---|---|---|
| Our Reference: | UNITS | 159640-4 | 159640-6 |
| Your Reference | ---------- | 101 | 110 |
| | - | | |
| Depth | ---------- | 0.3 | 0.4 |
| Date Sampled | | 19/12/2016 | 20/12/2016 |
| Type of sample | | Material | Material |
| Date analysed | - | 29/12/2016 | 29/12/2016 |
| Mass / Dimension of Sample | - | 40x35x5mm | 30x20x5mm |
| Sample Description | - | Beige compressed fibre cement material | Grey compressed fibre cement material |
| Asbestos ID in materials | - | Chrysotile asbestos detected | Chrysotile asbestos detected<br>Amosite asbestos detected<br>Crocidolite asbestos detected |

| Chromium Suite | | |
|---|---|---|
| Our Reference: | UNITS | 159640-1 |
| Your Reference | ---------- - | 116 |
| Depth | ---------- | 4 |
| Date Sampled | | 19/12/2016 |
| Type of sample | | soil |
| Date prepared | - | 28/12/2016 |
| Date analysed | - | 28/12/2016 |
| pH kcl | pH units | 8.6 |
| s-TAA pH 6.5 | %w/w S | <0.01 |
| TAA pH 6.5 | moles $H^+$/t | <5 |
| Chromium Reducible Sulfur | %w/w | 0.42 |
| a-Chromium Reducible Sulfur | moles $H^+$/t | 260 |
| $S_{HCl}$ | %w/w S | <0.005 |
| $S_{KCl}$ | %w/w S | 0.10 |
| $S_{NAS}$ | %w/w S | <0.005 |
| $ANC_{BT}$ | % $CaCO_3$ | 1.2 |
| s-$ANC_{BT}$ | %w/w S | 0.39 |
| s-Net Acidity | %w/w S | 0.16 |
| a-Net Acidity | moles $H^+$/t | 100 |
| Liming rate | kg $CaCO_3$/t | 7.7 |
| a-Net Acidity without ANCE | moles $H^+$/t | 260 |
| Liming rate without ANCE | kg $CaCO_3$/t | 20 |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes. |
| Org-014 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>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.<br><br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'TEQ 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.<br>2. 'TEQ 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.<br>3. 'TEQ 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.<br>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. |
| Metals-020 | Determination of various metals by ICP-AES. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| Inorg-008 | Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours. |
| 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.<br>Results reported denoted with * are outside our scope of NATA accreditation. |

| Method ID | Methodology Summary |
|---|---|
| | **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)<br><br>**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.<br><br>Estimation = Estimated asbestos weight<br><br>Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques. |
| ASB-001 | Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004. |
| Inorg-068 | Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 22/12/2016 | [NT] | [NT] | LCS-14 | 22/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-14 | 23/12/2016 |
| TRHC$_6$ - C$_9$ | mg/kg | 25 | Org-016 | <25 | [NT] | [NT] | LCS-14 | 81% |
| TRHC$_6$ - C$_{10}$ | mg/kg | 25 | Org-016 | <25 | [NT] | [NT] | LCS-14 | 81% |
| Benzene | mg/kg | 0.2 | Org-016 | <0.2 | [NT] | [NT] | LCS-14 | 91% |
| Toluene | mg/kg | 0.5 | Org-016 | <0.5 | [NT] | [NT] | LCS-14 | 79% |
| Ethylbenzene | mg/kg | 1 | Org-016 | <1 | [NT] | [NT] | LCS-14 | 78% |
| m+p-xylene | mg/kg | 2 | Org-016 | <2 | [NT] | [NT] | LCS-14 | 79% |
| o-Xylene | mg/kg | 1 | Org-016 | <1 | [NT] | [NT] | LCS-14 | 78% |
| naphthalene | mg/kg | 1 | Org-014 | <1 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate* aaa-Trifluorotoluene | % | | Org-016 | 79 | [NT] | [NT] | LCS-14 | 86% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 23/12/2016 | [NT] | [NT] | LCS-14 | 22/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-14 | 23/12/2016 |
| TRHC$_{10}$ - C$_{14}$ | mg/kg | 50 | Org-003 | <50 | [NT] | [NT] | LCS-14 | 103% |
| TRHC$_{15}$ - C$_{28}$ | mg/kg | 100 | Org-003 | <100 | [NT] | [NT] | LCS-14 | 107% |
| TRHC$_{29}$ - C$_{36}$ | mg/kg | 100 | Org-003 | <100 | [NT] | [NT] | LCS-14 | 106% |
| TRH>C$_{10}$-C$_{16}$ | mg/kg | 50 | Org-003 | <50 | [NT] | [NT] | LCS-14 | 103% |
| TRH>C$_{16}$-C$_{34}$ | mg/kg | 100 | Org-003 | <100 | [NT] | [NT] | LCS-14 | 107% |
| TRH>C$_{34}$-C$_{40}$ | mg/kg | 100 | Org-003 | <100 | [NT] | [NT] | LCS-14 | 106% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 93 | [NT] | [NT] | LCS-14 | 97% |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base ll Duplicate ll %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 22/12/2016 | [NT] | [NT] | LCS-14 | 22/12/2016 |
| Date analysed | - | | | 23/12/2016 | [NT] | [NT] | LCS-14 | 23/12/2016 |
| Naphthalene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-14 | 112% |
| Acenaphthylene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-14 | 110% |
| Phenanthrene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-14 | 107% |
| Anthracene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-14 | 103% |
| Pyrene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-14 | 107% |
| Benzo(a)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Benzo(b,j +k)fluoranthene | mg/kg | 0.2 | Org-012 | <0.2 | [NT] | [NT] | [NR] | [NR] |

| QUALITY CONTROL<br>PAHs in Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)pyrene | mg/kg | 0.05 | Org-012 | <0.05 | [NT] | [NT] | LCS-14 | 128% |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 87 | [NT] | [NT] | LCS-14 | 99% |
| QUALITY CONTROL<br>Acid Extractable metals in soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | | | 22/12/2016 | [NT] | [NT] | LCS-14 | 22/12/2016 |
| Date analysed | - | | | 22/12/2016 | [NT] | [NT] | LCS-14 | 22/12/2016 |
| Arsenic | mg/kg | 4 | Metals-020 | <4 | [NT] | [NT] | LCS-14 | 110% |
| Cadmium | mg/kg | 0.4 | Metals-020 | <0.4 | [NT] | [NT] | LCS-14 | 96% |
| Chromium | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 110% |
| Copper | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 108% |
| Lead | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 103% |
| Mercury | mg/kg | 0.1 | Metals-021 | <0.1 | [NT] | [NT] | LCS-14 | 106% |
| Nickel | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 99% |
| Zinc | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 99% |
| Manganese | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 100% |
| Iron | mg/kg | 1 | Metals-020 | <1 | [NT] | [NT] | LCS-14 | 102% |
| QUALITY CONTROL<br>Misc Inorg - Soil | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | | | 28/12/2016 | [NT] | [NT] | LCS-1 | 28/12/2016 |
| Date analysed | - | | | 28/12/2016 | [NT] | [NT] | LCS-1 | 28/12/2016 |
| pH 1:5 soil:water | pH Units | | Inorg-001 | [NT] | [NT] | [NT] | LCS-1 | 101% |
| Electrical Conductivity 1:5 soil:water | µS/cm | 1 | Inorg-002 | <1 | [NT] | [NT] | LCS-1 | 103% |
| QUALITY CONTROL<br>Chromium Suite | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | | | 28/12/2016 | [NT] | [NT] | LCS-14 | 28/12/2016 |
| Date analysed | - | | | 28/12/2016 | [NT] | [NT] | LCS-14 | 28/12/2016 |
| $pH_{kcl}$ | pH units | | Inorg-068 | [NT] | [NT] | [NT] | LCS-14 | 93% |
| s-TAA pH 6.5 | %w/w S | 0.01 | Inorg-068 | <0.01 | [NT] | [NT] | LCS-14 | 115% |
| TAA pH 6.5 | moles $H^+$/t | 5 | Inorg-068 | <5 | [NT] | [NT] | [NR] | [NR] |
| Chromium Reducible Sulfur | %w/w | 0.005 | Inorg-068 | <0.005 | [NT] | [NT] | LCS-14 | 98% |
| a-Chromium Reducible Sulfur | moles $H^+$/t | 3 | Inorg-068 | <3 | [NT] | [NT] | LCS-14 | 125% |

| QUALITY CONTROL<br><br>Chromium Suite | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| $S_{HCl}$ | %w/w S | 0.005 | Inorg-068 | <0.005 | [NT] | [NT] | [NR] | [NR] |
| $S_{KCl}$ | %w/w S | 0.005 | Inorg-068 | <0.005 | [NT] | [NT] | [NR] | [NR] |
| $S_{NAS}$ | %w/w S | 0.005 | Inorg-068 | <0.005 | [NT] | [NT] | [NR] | [NR] |
| $ANC_{BT}$ | % $CaCO_3$ | 0.05 | Inorg-068 | <0.05 | [NT] | [NT] | [NR] | [NR] |
| s-$ANC_{BT}$ | %w/w S | 0.05 | Inorg-068 | <0.05 | [NT] | [NT] | [NR] | [NR] |
| s-Net Acidity | %w/w S | 0.01 | Inorg-068 | <0.01 | [NT] | [NT] | [NR] | [NR] |
| a-Net Acidity | moles $H^+$/t | 10 | Inorg-068 | <10 | [NT] | [NT] | [NR] | [NR] |
| Liming rate | kg $CaCO_3$/t | 0.75 | Inorg-068 | <0.75 | [NT] | [NT] | [NR] | [NR] |
| a-Net Acidity without ANCE | moles $H^+$/t | 10 | Inorg-068 | <10 | [NT] | [NT] | [NR] | [NR] |
| Liming rate without ANCE | kg $CaCO_3$/t | 0.75 | Inorg-068 | <0.75 | [NT] | [NT] | [NR] | [NR] |

**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.

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Matt Tang, Lucy Zhu |
| Asbestos ID was authorised by Approved Signatory: | Paul Ching |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

# CERTIFICATE OF ANALYSIS 159946

**Client:**

**Douglas Partners Newcastle**
Box 324 Hunter Region Mail Centre
Newcastle
NSW 2310

**Attention:** Chris Bozinovski / Caitlyn Falla

**Sample log in details:**

| | |
|---|---|
| Your Reference: | **91034.00, Newcastle** |
| No. of samples: | 6 Waters |
| Date samples received / completed instructions received | 09/01/17 / 09/01/17 |

**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: / Issue Date: | 13/01/17 / 13/01/17 |
| Date of Preliminary Report: | Not Issued |

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

**Results Approved By:**

David Springer
General Manager

| vTRH(C6-C10)/BTEXN in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159946-1 | 159946-2 | 159946-3 | 159946-4 | 159946-5 |
| Your Reference | ---------- - | SW1 | 103 | BD1 | 116 | 114 |
| Date Sampled | ---------- | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Date analysed | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| TRHC$_6$ - C$_9$ | µg/L | <10 | <10 | <10 | <10 | <10 |
| TRHC$_6$ - C$_{10}$ | µg/L | <10 | <10 | <10 | <10 | <10 |
| TRHC$_6$ - C$_{10}$ less BTEX (F1) | µg/L | <10 | <10 | <10 | <10 | <10 |
| Benzene | µg/L | <1 | <1 | <1 | <1 | <1 |
| Toluene | µg/L | <1 | <1 | <1 | <1 | <1 |
| Ethylbenzene | µg/L | <1 | <1 | <1 | <1 | <1 |
| m+p-xylene | µg/L | <2 | <2 | <2 | <2 | <2 |
| o-xylene | µg/L | <1 | <1 | <1 | <1 | <1 |
| Naphthalene | µg/L | <1 | <1 | <1 | <1 | <1 |
| *Surrogate* Dibromofluoromethane | % | 101 | 102 | 102 | 101 | 101 |
| *Surrogate* toluene-d8 | % | 99 | 101 | 102 | 100 | 99 |
| *Surrogate* 4-BFB | % | 109 | 109 | 109 | 110 | 109 |

| vTRH(C6-C10)/BTEXN in Water | | |
|---|---|---|
| Our Reference: | UNITS | 159946-6 |
| Your Reference | ---------- - | 130 |
| Date Sampled | ---------- | 5/01/2017 |
| Type of sample | | Water |
| Date extracted | - | 10/01/2017 |
| Date analysed | - | 10/01/2017 |
| TRHC$_6$ - C$_9$ | µg/L | <10 |
| TRHC$_6$ - C$_{10}$ | µg/L | <10 |
| TRHC$_6$ - 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 | % | 101 |
| *Surrogate* toluene-d8 | % | 98 |
| *Surrogate* 4-BFB | % | 111 |

| svTRH (C10-C40) in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159946-1 | 159946-2 | 159946-3 | 159946-4 | 159946-5 |
| Your Reference | ---------- | SW1 | 103 | BD1 | 116 | 114 |
| Date Sampled | - ---------- | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Date analysed | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRHC$_{29}$ - 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 | % | 73 | 106 | 88 | 89 | 80 |

| svTRH (C10-C40) in Water | | |
|---|---|---|
| Our Reference: | UNITS | 159946-6 |
| Your Reference | ---------- | 130 |
| Date Sampled | - ---------- | 5/01/2017 |
| Type of sample | | Water |
| Date extracted | - | 10/01/2017 |
| Date analysed | - | 10/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | <50 |
| TRHC$_{15}$ - C$_{28}$ | µg/L | <100 |
| TRHC$_{29}$ - 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 | % | 83 |

| PAHs in Water - Low Level<br>Our Reference:<br>Your Reference<br><br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>----------<br> | 159946-1<br>SW1<br><br>5/01/2017<br>Water | 159946-2<br>103<br><br>5/01/2017<br>Water | 159946-3<br>BD1<br><br>5/01/2017<br>Water | 159946-4<br>116<br><br>5/01/2017<br>Water | 159946-5<br>114<br><br>5/01/2017<br>Water |
|---|---|---|---|---|---|---|
| Date extracted | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Date analysed | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| 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 | NIL (+)VE | NIL (+)VE | NIL (+)VE | NIL (+)VE | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 83 | 91 | 86 | 77 | 70 |

| PAHs in Water - Low Level | | |
|---|---|---|
| Our Reference: | UNITS | 159946-6 |
| Your Reference | ---------- | 130 |
| | - | |
| Date Sampled | ---------- | 5/01/2017 |
| Type of sample | | Water |
| Date extracted | - | 10/01/2017 |
| Date analysed | - | 10/01/2017 |
| Naphthalene | µg/L | <0.2 |
| Acenaphthylene | µg/L | <0.1 |
| Acenaphthene | µg/L | <0.1 |
| Fluorene | µg/L | <0.1 |
| Phenanthrene | µg/L | <0.1 |
| Anthracene | µg/L | <0.1 |
| Fluoranthene | µg/L | <0.1 |
| Pyrene | µg/L | <0.1 |
| Benzo(a)anthracene | µg/L | <0.1 |
| Chrysene | µg/L | <0.1 |
| Benzo(b,j+k)fluoranthene | µg/L | <0.2 |
| Benzo(a)pyrene | µg/L | <0.1 |
| Indeno(1,2,3-c,d)pyrene | µg/L | <0.1 |
| Dibenzo(a,h)anthracene | µg/L | <0.1 |
| Benzo(g,h,i)perylene | µg/L | <0.1 |
| Benzo(a)pyrene TEQ | µg/L | <0.5 |
| Total +ve PAH's | µg/L | NIL (+)VE |
| *Surrogate p*-Terphenyl-d14 | % | 76 |

| HM in water - dissolved<br>Our Reference:<br>Your Reference<br><br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>---------- | 159946-1<br>SW1<br><br>5/01/2017<br>Water | 159946-2<br>103<br><br>5/01/2017<br>Water | 159946-3<br>BD1<br><br>5/01/2017<br>Water | 159946-4<br>116<br><br>5/01/2017<br>Water | 159946-5<br>114<br><br>5/01/2017<br>Water |
|---|---|---|---|---|---|---|
| Date prepared | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Date analysed | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Arsenic-Dissolved | µg/L | 2 | 5 | 5 | 14 | 3 |
| Cadmium-Dissolved | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | 5 | <1 | <1 | <1 | <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 | <1 | 75 | 83 | 3 | 15 |
| Zinc-Dissolved | µg/L | 9 | 13 | 12 | 3 | 2 |
| Manganese-Dissolved | µg/L | 10 | 230 | 230 | 130 | 43 |
| Molybdenum-Dissolved | µg/L | 11 | 8 | 9 | 21 | 4 |
| Iron-Dissolved | µg/L | <10 | 720 | 730 | 1,200 | 220 |
| Beryllium-Dissolved | µg/L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Boron-Dissolved | µg/L | 4,000 | 640 | 640 | 320 | 480 |
| Selenium-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |

| HM in water - dissolved<br>Our Reference:<br>Your Reference<br><br>Date Sampled<br>Type of sample | UNITS<br>----------<br>-<br>---------- | 159946-6<br>130<br><br>5/01/2017<br>Water |
|---|---|---|
| Date prepared | - | 10/01/2017 |
| Date analysed | - | 10/01/2017 |
| Arsenic-Dissolved | µg/L | 4 |
| 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 | 11 |
| Zinc-Dissolved | µg/L | 3 |
| Manganese-Dissolved | µg/L | 150 |
| Molybdenum-Dissolved | µg/L | 18 |
| Iron-Dissolved | µg/L | 1,000 |
| Beryllium-Dissolved | µg/L | <0.5 |
| Boron-Dissolved | µg/L | 210 |
| Selenium-Dissolved | µg/L | <1 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159946-1 | 159946-2 | 159946-3 | 159946-4 | 159946-5 |
| Your Reference | ---------- - | SW1 | 103 | BD1 | 116 | 114 |
| Date Sampled | ---------- | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| Date analysed | - | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 | 09/01/2017 |
| Oil & Grease (LLE) | mg/L | <5 | <5 | <5 | <5 | <5 |
| pH | pH Units | 7.3 | 5.9 | 5.8 | 7.3 | 7.6 |
| Electrical Conductivity | µS/cm | 32,000 | 6,000 | 6,000 | 840 | 960 |
| Turbidity | NTU | 0.9 | 110 | 100 | 84 | 79 |
| Total Nitrogen in water | mg/L | <0.1 | 0.7 | 0.8 | 1.1 | 1.9 |

| Miscellaneous Inorganics | | |
|---|---|---|
| Our Reference: | UNITS | 159946-6 |
| Your Reference | ---------- - | 130 |
| Date Sampled | ---------- | 5/01/2017 |
| Type of sample | | Water |
| Date prepared | - | 09/01/2017 |
| Date analysed | - | 09/01/2017 |
| Oil & Grease (LLE) | mg/L | <5 |
| pH | pH Units | 7.2 |
| Electrical Conductivity | µS/cm | 770 |
| Turbidity | NTU | 69 |
| Total Nitrogen in water | mg/L | 1.1 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference: | UNITS | 159946-1 | 159946-2 | 159946-3 | 159946-4 | 159946-5 |
| Your Reference | ---------- - | SW1 | 103 | BD1 | 116 | 114 |
| Date Sampled | ---------- | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 | 5/01/2017 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Date analysed | - | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 | 10/01/2017 |
| Phosphorus - Total | mg/L | <0.05 | 0.1 | 0.2 | 0.2 | 0.4 |

| Metals in Waters - Acid extractable | | |
|---|---|---|
| Our Reference: | UNITS | 159946-6 |
| Your Reference | ---------- - | 130 |
| Date Sampled | ---------- | 5/01/2017 |
| Type of sample | | Water |
| Date prepared | - | 10/01/2017 |
| Date analysed | - | 10/01/2017 |
| Phosphorus - Total | mg/L | <0.05 |

| Method ID | Methodology Summary |
|---|---|
| Org-016 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| Org-013 | Water samples are analysed directly by purge and trap GC-MS. |
| Org-003 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>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-012 | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. |
| Metals-022 ICP-MS | Determination of various metals by ICP-MS. |
| Metals-021 | Determination of Mercury by Cold Vapour AAS. |
| Inorg-003 | Oil & Grease - determine gravimetrically following extraction with Hexane, in accordance with APHA latest edition, 5520-B. |
| Inorg-001 | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| Inorg-002 | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons. |
| Inorg-022 | Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B. |
| Inorg-055/062 | Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. |
| Metals-020 | Determination of various metals by ICP-AES. |

| QUALITY CONTROL<br>vTRH(C6-C10)/BTEXN in Water | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 10/01/2017 | 159946-1 | 10/01/2017 \|\| 10/01/2017 | LCS-W1 | 10/01/2017 |
| Date analysed | - | | | 10/01/2017 | 159946-1 | 10/01/2017 \|\| 10/01/2017 | LCS-W1 | 10/01/2017 |
| TRHC$_6$ - C$_9$ | µg/L | 10 | Org-016 | <10 | 159946-1 | <10 \|\| <10 | LCS-W1 | 106% |
| TRHC$_6$ - C$_{10}$ | µg/L | 10 | Org-016 | <10 | 159946-1 | <10 \|\| <10 | LCS-W1 | 106% |
| Benzene | µg/L | 1 | Org-016 | <1 | 159946-1 | <1 \|\| <1 | LCS-W1 | 114% |
| Toluene | µg/L | 1 | Org-016 | <1 | 159946-1 | <1 \|\| <1 | LCS-W1 | 107% |
| Ethylbenzene | µg/L | 1 | Org-016 | <1 | 159946-1 | <1 \|\| <1 | LCS-W1 | 102% |
| m+p-xylene | µg/L | 2 | Org-016 | <2 | 159946-1 | <2 \|\| <2 | LCS-W1 | 104% |
| o-xylene | µg/L | 1 | Org-016 | <1 | 159946-1 | <1 \|\| <1 | LCS-W1 | 104% |
| Naphthalene | µg/L | 1 | Org-013 | <1 | 159946-1 | <1 \|\| <1 | [NR] | [NR] |
| *Surrogate* Dibromofluoromethane | % | | Org-016 | 101 | 159946-1 | 101 \|\| 101 \|\| RPD: 0 | LCS-W1 | 102% |
| *Surrogate* toluene-d8 | % | | Org-016 | 99 | 159946-1 | 99 \|\| 100 \|\| RPD: 1 | LCS-W1 | 99% |
| *Surrogate* 4-BFB | % | | Org-016 | 109 | 159946-1 | 109 \|\| 109 \|\| RPD: 0 | LCS-W1 | 97% |

| QUALITY CONTROL<br>svTRH (C10-C40) in Water | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 10/01/2017 | [NT] | [NT] | LCS-W1 | 10/01/2017 |
| Date analysed | - | | | 10/01/2017 | [NT] | [NT] | LCS-W1 | 10/01/2017 |
| TRHC$_{10}$ - C$_{14}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 120% |
| TRHC$_{15}$ - C$_{28}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 109% |
| TRHC$_{29}$ - C$_{36}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 111% |
| TRH>C$_{10}$ - C$_{16}$ | µg/L | 50 | Org-003 | <50 | [NT] | [NT] | LCS-W1 | 120% |
| TRH>C$_{16}$ - C$_{34}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 109% |
| TRH>C$_{34}$ - C$_{40}$ | µg/L | 100 | Org-003 | <100 | [NT] | [NT] | LCS-W1 | 111% |
| *Surrogate* o-Terphenyl | % | | Org-003 | 78 | [NT] | [NT] | LCS-W1 | 118% |

| QUALITY CONTROL<br>PAHs in Water - Low Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base \|\| Duplicate \|\| %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date extracted | - | | | 10/01/2017 | [NT] | [NT] | LCS-W1 | 10/01/2017 |
| Date analysed | - | | | 10/01/2017 | [NT] | [NT] | LCS-W1 | 10/01/2017 |
| Naphthalene | µg/L | 0.2 | Org-012 | <0.2 | [NT] | [NT] | LCS-W1 | 87% |
| Acenaphthylene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Acenaphthene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Fluorene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-W1 | 99% |
| Phenanthrene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-W1 | 96% |
| Anthracene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Fluoranthene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-W1 | 92% |
| Pyrene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-W1 | 88% |

| QUALITY CONTROL<br><br>PAHs in Water - Low Level | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Chrysene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | LCS-W1 | 86% |
| Benzo(b,j+k) fluoranthene | µg/L | 0.2 | Org-012 | <0.2 | [NT] | [NT] | [NR] | [NR] |
| Benzo(a)pyrene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Indeno(1,2,3-c,d)pyrene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Dibenzo(a,h)anthracene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| Benzo(g,h,i)perylene | µg/L | 0.1 | Org-012 | <0.1 | [NT] | [NT] | [NR] | [NR] |
| *Surrogate p*-Terphenyl-d14 | % | | Org-012 | 70 | [NT] | [NT] | LCS-W1 | 75% |
| QUALITY CONTROL<br><br>HM in water - dissolved | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br><br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
| Date prepared | - | | | 09/01/2017 | [NT] | [NT] | LCS-W2 | 09/01/2017 |
| Date analysed | - | | | 09/01/2017 | [NT] | [NT] | LCS-W2 | 09/01/2017 |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 102% |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 ICP-MS | <0.1 | [NT] | [NT] | LCS-W2 | 107% |
| Chromium-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 98% |
| Copper-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 92% |
| Lead-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 107% |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | <0.05 | [NT] | [NT] | LCS-W2 | 87% |
| Nickel-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 104% |
| Zinc-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 105% |
| Manganese-Dissolved | µg/L | 5 | Metals-022 ICP-MS | <5 | [NT] | [NT] | LCS-W2 | 99% |
| Molybdenum-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 93% |
| Iron-Dissolved | µg/L | 10 | Metals-022 ICP-MS | <10 | [NT] | [NT] | LCS-W2 | 102% |
| Beryllium-Dissolved | µg/L | 0.5 | Metals-022 ICP-MS | <0.5 | [NT] | [NT] | LCS-W2 | 101% |
| Boron-Dissolved | µg/L | 20 | Metals-022 ICP-MS | <20 | [NT] | [NT] | LCS-W2 | 108% |
| Selenium-Dissolved | µg/L | 1 | Metals-022 ICP-MS | <1 | [NT] | [NT] | LCS-W2 | 104% |

| QUALITY CONTROL<br>Miscellaneous Inorganics | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Date analysed | - | | | 09/01/2017 | [NT] | [NT] | LCS-W1 | 09/01/2017 |
| Oil & Grease (LLE) | mg/L | 5 | Inorg-003 | <5 | [NT] | [NT] | LCS-W1 | 93% |
| pH | pH Units | | Inorg-001 | [NT] | [NT] | [NT] | LCS-W1 | 101% |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | <1 | [NT] | [NT] | LCS-W1 | 109% |
| Turbidity | NTU | 0.1 | Inorg-022 | <0.1 | [NT] | [NT] | LCS-W1 | 91% |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062 | <0.1 | [NT] | [NT] | LCS-W1 | 90% |

| QUALITY CONTROL<br>Metals in Waters - Acid extractable | UNITS | PQL | METHOD | Blank | Duplicate Sm# | Duplicate results<br>Base II Duplicate II %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|---|---|---|
| Date prepared | - | | | 10/01/2017 | 159946-1 | 10/01/2017 \|\| 10/01/2017 | LCS-W1 | 10/01/2017 |
| Date analysed | - | | | 10/01/2017 | 159946-1 | 10/01/2017 \|\| 10/01/2017 | LCS-W1 | 10/01/2017 |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | <0.05 | 159946-1 | <0.05 \|\| <0.05 | LCS-W1 | 103% |

| QUALITY CONTROL<br>HM in water - dissolved | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD |
|---|---|---|---|
| Date prepared | - | 159946-2 | 10/01/2017 \|\| 10/01/2017 |
| Date analysed | - | 159946-2 | 10/01/2017 \|\| 10/01/2017 |
| Mercury-Dissolved | µg/L | 159946-2 | <0.05 \|\| <0.05 |

| QUALITY CONTROL<br>Metals in Waters - Acid extractable | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | [NT] | [NT] | 159946-2 | 10/01/2017 |
| Date analysed | - | [NT] | [NT] | 159946-2 | 10/01/2017 |
| Phosphorus - Total | mg/L | [NT] | [NT] | 159946-2 | 106% |

| QUALITY CONTROL<br>HM in water - dissolved | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Date prepared | - | 159946-4 | 10/01/2017 \|\| 10/01/2017 | 159946-3 | 09/01/2017 |
| Date analysed | - | 159946-4 | 10/01/2017 \|\| 10/01/2017 | 159946-3 | 09/01/2017 |
| Arsenic-Dissolved | µg/L | 159946-4 | 14 \|\| 14 \|\| RPD: 0 | [NR] | [NR] |
| Cadmium-Dissolved | µg/L | 159946-4 | <0.1 \|\| <0.1 | [NR] | [NR] |
| Chromium-Dissolved | µg/L | 159946-4 | <1 \|\| <1 | [NR] | [NR] |
| Copper-Dissolved | µg/L | 159946-4 | <1 \|\| <1 | [NR] | [NR] |
| Lead-Dissolved | µg/L | 159946-4 | <1 \|\| <1 | [NR] | [NR] |
| Mercury-Dissolved | µg/L | 159946-4 | <0.05 \|\| [N/T] | 159946-3 | 81% |
| Nickel-Dissolved | µg/L | 159946-4 | 3 \|\| 3 \|\| RPD: 0 | [NR] | [NR] |
| Zinc-Dissolved | µg/L | 159946-4 | 3 \|\| 3 \|\| RPD: 0 | [NR] | [NR] |
| Manganese-Dissolved | µg/L | 159946-4 | 130 \|\| 130 \|\| RPD: 0 | [NR] | [NR] |
| Molybdenum-Dissolved | µg/L | 159946-4 | 21 \|\| 20 \|\| RPD: 5 | [NR] | [NR] |
| Iron-Dissolved | µg/L | 159946-4 | 1200 \|\| 1200 \|\| RPD: 0 | [NR] | [NR] |

| QUALITY CONTROL<br>HM in water - dissolved | UNITS | Dup. Sm# | Duplicate<br>Base + Duplicate + %RPD | Spike Sm# | Spike % Recovery |
|---|---|---|---|---|---|
| Beryllium-Dissolved | µg/L | 159946-4 | <0.5 \|\| <0.5 | [NR] | [NR] |
| Boron-Dissolved | µg/L | 159946-4 | 320 \|\| 320 \|\| RPD: 0 | [NR] | [NR] |
| Selenium-Dissolved | µg/L | 159946-4 | <1 \|\| <1 | [NR] | [NR] |

**Report Comments:**

Total metals: no preserved sample was received for samples 159946-2 to 159946-6, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

| | |
|---|---|
| Asbestos ID was analysed by Approved Identifier: | Not applicable for this job |
| Asbestos ID was authorised by Approved Signatory: | Not applicable for this job |

| | | |
|---|---|---|
| INS: Insufficient sample for this test | PQL: Practical Quantitation Limit | NT: Not tested |
| NR: Test not required | RPD: Relative Percent Difference | NA: Test not required |
| <: Less than | >: Greater than | LCS: Laboratory Control Sample |

## 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.

## 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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

# Quality Assurance / Quality Control Report
# Waste Classification and Groundwater Assessment
# 50 Honeysuckle Drive, Newcastle

## Q1. Data Quality Indicators

The data quality indicators (DQIs) and the procedures designed to enable achievement of the data quality objective (DQOs) are shown in Table C1.

**Table C1: Data Quality Indicators**

| DQI | Achievement Evaluation Procedure |
|---|---|
| Documentation completeness | Completion of field and laboratory C-O-C documentation. |
| Data completeness | Analysis of appropriate determinants based on site history. |
| Data comparability | Use of National Association of Testing Authorities, Australia (NATA) certified laboratory, use of consistent sampling technique. |
| Data Representativeness | Completion of logs describing conditions encountered, collection of samples representative of materials encountered at the site, appropriate sampling methodology, analysis of a range of materials encountered, appropriate collection, handling, storage and preservation. |
| Precision and accuracy for sampling and analysis | Achievement of 50% Relative Percentage Difference (RPD) for replicate analysis, acceptable levels for laboratory QC criteria. |

## Q2. Field Quality Assurance and Quality Control

Quality Assurance (QA) was maintained by:

- Compliance with a Project Quality Plan written for the objectives of the study;
- Using qualified engineers/scientists to undertake the field supervision and sampling;
- Following the Douglas Partners Pty Ltd (DP) operating procedures for sampling, field testing and decontamination as presented in Table C2; and
- Using NATA registered laboratories for sample testing that generally utilise standard laboratory methods of the US EPA, the APHA and NSW EPA.

**Table C2: Field Procedures**

| Abbreviation | Procedure Name |
|---|---|
| FPM LOG | Logging |
| FPM DECONT | Decontamination of Personnel and Equipment |
| FPM ENVID | Sample Identification, Handling, Transport and Storage of Contamination Samples |
| FPM PIDETC | Operation of Field Analysers |
| FPM WATSAMP | Water Sampling |
| FPM ENVSAMP | Sampling of Contaminated Soils |

Notes to Table C2:
From DP Field Procedures Manual

Quality Control (QC) of the laboratory programme was achieved by the following means:

- Check replicate - a specific sample was split in the field, placed in separate containers and labelled with different sample numbers, and sent to the laboratory for analysis;
- Method blanks - the laboratory ran reagent blanks to confirm the equipment and standards used were uncontaminated;
- Laboratory replicates - the laboratory split samples internally and conducted tests on separate extracts;
- Laboratory spikes - samples were spiked by the laboratory with a known concentration of contaminants and subsequently tested for percent recovery;

## Discussion

### A. Check Replicate

The Relative Percent Difference (RPD) between replicate results is used as a measure of laboratory reproducibility and is given by the following:

$$RPD = \frac{ABS\,(Replicate\ \ result\,1 - Replicate\ \ result\,2)}{(Replicate\ \ result\,1 + Replicate\ \ result\,2)/2}\,x\,100$$

The RPD can have a value between 0% and 200%. An RPD data quality objective of up to 50% is generally considered to be acceptable for organic analysis, and 35% for inorganics (i.e. Metals).

A summary of the results of the replicate QA/QC testing is provided in Table C3 and C4.

RPDs for replicates generally ranged from 0% to 40% and were within the quality control objectives. Elevated RPDs ranging from 67% to 164% were found for selected analytes, and may be attributed to the relatively low concentrations and/or the heterogeneity of the fill materials, which results in high RPDs.

## Table C3: Results of Quality Control Analysis – Soil

| | | | 104 | D16 | RPD | 108 | D17 | RPD | 114 | D13 | RPD | 122 | D7 | RPD | 123 | D14 | RPD | 125 | D6 | RPD | 129 | D15 | RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.55 | 0.55 | (%) | 1 | 1 | (%) | 0.55 | 0.55 | (%) | 0.6 | 0.6 | (%) | 1.9 | 1.9 | (%) | 0.5 | 0.5 | (%) | 0.6 | 0.6 | (%) |
| Analytes | Units | PQL | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | |
| Chloride | mg/kg | 10 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Electrical conductivity *(lab) | µS/cm | 1 | 71 | - | N/A | 55 | - | N/A | 58 | 43 | 30 | 44 | 51 | 15 | 50 | - | N/A | 55 | 56 | 2 | 46 | - | N/A |
| Moisture | % | 0.1 | 2 | 2.7 | 30 | 2.4 | 1.9 | 23 | 1.7 | 3.2 | 61 | 1.6 | 2.4 | 40 | 2.7 | 4.8 | 56 | 1.3 | 1.7 | 27 | 2.3 | 2.6 | 12 |
| Sulphate | mg/kg | 10 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| pH 1:5 soil:water | pH Units | | 9.3 | - | N/A | 9.2 | - | N/A | 9.3 | 9.5 | 2 | 9.1 | 9.1 | 0 | 9.2 | - | N/A | 9.3 | 9.3 | 0 | 9.1 | - | N/A |
| Metals | | | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 4 | 5 | <4 | N/A | <4 | <4 | N/A | 4 | 5 | 22 | 5 | 5 | 0 | <4 | <4 | N/A | 4 | 4 | 0 | <4 | <4 | N/A |
| Beryllium | mg/kg | 1 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Boron | mg/kg | 3 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Cadmium | mg/kg | 0.4 | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A | <0.4 | <0.4 | N/A |
| Chromium (III+VI) | mg/kg | 1 | 3 | 2 | 40 | 2 | 1 | 67 | 1 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 67 | 1 | 1 | 0 |
| Copper | mg/kg | 1 | 8 | 4 | 67 | 1 | <1 | N/A | <1 | <1 | N/A | 4 | 6 | 40 | 18 | 10 | 57 | 1 | 1 | 0 | 2 | 1 | 67 |
| Iron | mg/kg | 1 | 3800 | 1500 | 87 | 1500 | 1300 | 14 | 1600 | 1400 | 13 | 1500 | 1800 | 18 | 2100 | 2000 | 5 | 1300 | 1500 | 14 | 1200 | 1200 | 0 |
| Lead | mg/kg | 1 | 15 | 4 | 116 | 2 | 1 | 67 | <1 | <1 | N/A | 8 | 12 | 40 | 8 | 7 | 13 | 1 | 1 | 0 | 3 | 2 | 40 |
| Manganese | mg/kg | 1 | 93 | 18 | 135 | 15 | 12 | 22 | 12 | 13 | 8 | 39 | 50 | 25 | 37 | 40 | 8 | 13 | 18 | 32 | 11 | 11 | 0 |
| Mercury | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Molybdenum | mg/kg | 1 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Nickel | mg/kg | 1 | 3 | 1 | 100 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | 1 | N/A | 2 | 2 | 0 | <1 | 1 | N/A | <1 | <1 | N/A |
| Selenium | mg/kg | 2 | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A | - | - | N/A |
| Zinc | mg/kg | 1 | 32 | 9 | 112 | 4 | 3 | 29 | 2 | 2 | 0 | 75 | 110 | 38 | 26 | 20 | 26 | 3 | 4 | 29 | 12 | 8 | 40 |
| TPH | | | | | | | | | | | | | | | | | | | | | | | |
| C10-C16 | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C16-C34 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| C34-C40 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| F2-NAPHTHALENE | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C6 - C9 | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| C10 - C14 | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C15 - C28 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| C29-C36 | mg/kg | 100 | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A | <100 | <100 | N/A |
| +C10 - C36 (Sum of total) | mg/kg | | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A | <250 | <250 | N/A |
| C10 - C40 (Sum of total) | mg/kg | 50 | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A | <50 | <50 | N/A |
| C6-C10 less BTEX (F1) | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| C6-C10 | mg/kg | 25 | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A | <25 | <25 | N/A |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 0.2 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A |
| Ethylbenzene | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| Toluene | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Xylene (m & p) | mg/kg | 2 | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A | <2 | <2 | N/A |
| Xylene (o) | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| Xylene Total | mg/kg | 1 | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A | <1 | <1 | N/A |
| PAH/Phenols | | | | | | | | | | | | | | | | | | | | | | | |
| Total Positive PAHs | mg/kg | 0.05 | 0.4 | <0.05 | N/A | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A | 24 | 5.7 | 123 | 2 | 2.3 | 14 | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A |
| Acenaphthene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.3 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Acenaphthylene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Benz(a)anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.6 | 0.4 | 120 | 0.2 | 0.2 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Benzo(a) pyrene | mg/kg | 0.05 | 0.06 | <0.05 | N/A | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A | 1.9 | 0.5 | 117 | 0.1 | 0.2 | 67 | <0.05 | <0.05 | N/A | <0.05 | <0.05 | N/A |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(a)pyrene TEQ calc(half) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(a)pyrene TEQ calc(PQL) | mg/kg | 0.5 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | 2.7 | 0.6 | 127 | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A | <0.5 | <0.5 | N/A |
| Benzo(b,j+k)fluoranthene | mg/kg | 0.2 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A | 2.8 | 0.8 | 111 | 0.3 | 0.3 | 0 | <0.2 | <0.2 | N/A | <0.2 | <0.2 | N/A |
| Benzo(g,h,i)perylene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.3 | 0.4 | 106 | 0.1 | 0.1 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Chrysene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.5 | 0.5 | 100 | 0.2 | 0.2 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Fluoranthene | mg/kg | 0.1 | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 4.5 | 1.2 | 116 | 0.4 | 0.5 | 22 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Fluorene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 1.1 | 0.3 | 114 | 0.1 | 0.1 | 0 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Naphthalene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Phenanthrene | mg/kg | 0.1 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 3 | 0.3 | 164 | 0.1 | 0.2 | 67 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |
| Pyrene | mg/kg | 0.1 | 0.2 | <0.1 | N/A | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A | 4.1 | 1.1 | 115 | 0.4 | 0.5 | 22 | <0.1 | <0.1 | N/A | <0.1 | <0.1 | N/A |

**Table C3: Results of Quality Control Analysis – Soil (Continued)**

| | | | 104 | D16 | RPD | 108 | D17 | RPD | 114 | D13 | RPD | 122 | D7 | RPD | 123 | D14 | RPD | 125 | D6 | RPD | 129 | D15 | RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.55 | 0.55 | (%) | 1 | 1 | (%) | 0.55 | 0.55 | (%) | 0.6 | 0.6 | (%) | 1.9 | 1.9 | (%) | 0.5 | 0.5 | (%) | 0.6 | 0.6 | (%) |
| Analytes | Units | PQL | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | | 16/12/2016 | 16/12/2016 | | 19/12/2016 | 19/12/2016 | |
| Polychlorinated biphenyls | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs (Sum of total) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1016 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1221 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1232 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1242 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1248 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1254 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Arochlor 1260 | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Organochlorine pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Endosulfan | mg/kg | | <0.3 | - | N/A | - | - | N/A | <0.3 | - | N/A | - | - | N/A | - | - | N/A | <0.3 | - | N/A | - | - | N/A |
| 4,4-DDE | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| a-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Aldrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Aldrin + Dieldrin | mg/kg | | <0.2 | - | N/A | - | - | N/A | <0.2 | - | N/A | - | - | N/A | - | - | N/A | <0.2 | - | N/A | - | - | N/A |
| b-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlordane (cis) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlordane (trans) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| d-BHC | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDD | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDT | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| DDT+DDE+DDD | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dieldrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan I | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan II | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endosulfan sulphate | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endrin | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Endrin aldehyde | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| g-BHC (Lindane) | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Heptachlor | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Heptachlor epoxide | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Hexachlorobenzene | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Methoxychlor | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Organophosphorous Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Azinophos methyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Bromophos-ethyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlorpyrifos | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Chlorpyrifos-methyl | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Diazinon | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dichlorvos | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Dimethoate | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Ethion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Fenitrothion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Malathion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Ronnel | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Moderately Harmful Pesticides (total) | mg/kg | | <0.6 | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A |
| Pesticides (total, NSW Waste 2014) | mg/kg | | <0.6 | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A | - | - | N/A | <0.6 | - | N/A | - | - | N/A |
| Scheduled chemicals (NSW Waste 2014) | mg/kg | | <1.3 | - | N/A | - | - | N/A | <1.3 | - | N/A | - | - | N/A | - | - | N/A | <1.3 | - | N/A | - | - | N/A |
| Parathion | mg/kg | 0.1 | <0.1 | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A | - | - | N/A | <0.1 | - | N/A | - | - | N/A |

Notes to Table C3:

N/A – Not Applicable

RPD – Relative Percentage Difference

PQL - Practical Quantitation Limits

## Table C4: Results of Quality Control Analysis – Groundwater

| Analyte | Units | PQL | 103 5/01/2017 | BD1 5/01/2017 | RPD (%) |
|---|---|---|---|---|---|
| **Field** | | | | | |
| Turbidity | NTU | 0.1 | 110 | 100 | 10 |
| **Inorganics** | | | | | |
| Electrical conductivity *(lab) | µS/cm | 1 | 6000 | 6000 | 0 |
| Nitrogen (Total) | mg/L | 0.1 | 0.7 | 0.8 | 13 |
| pH (Lab) | pH_Units | | 5.9 | 5.8 | 2 |
| **Metals** | | | | | |
| Arsenic | mg/L | 0.001 | - | - | N/A |
| Arsenic (Filtered) | mg/L | 0.001 | 0.005 | 0.005 | 0 |
| Beryllium | mg/L | 0.0005 | - | - | N/A |
| Beryllium (Filtered) | mg/L | 0.0005 | <0.0005 | <0.0005 | N/A |
| Boron | mg/L | 0.02 | - | - | N/A |
| Boron (Filtered) | mg/L | 0.02 | 0.64 | 0.64 | 0 |
| Cadmium | mg/L | 0.0001 | - | - | N/A |
| Cadmium (Filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | N/A |
| Chromium (III+VI) | mg/L | 0.001 | - | - | N/A |
| Chromium (III+VI) (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Copper | mg/L | 0.001 | - | - | N/A |
| Copper (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Iron (Filtered) | mg/L | 0.01 | 0.72 | 0.73 | 1 |
| Lead | mg/L | 0.001 | - | - | N/A |
| Lead (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Manganese (Filtered) | mg/L | 0.005 | 0.23 | 0.23 | 0 |
| Mercury | mg/L | 0.00005 | - | - | N/A |
| Mercury (Filtered) | mg/L | 0.00005 | <0.00005 | <0.00005 | N/A |
| Molybdenum | mg/L | 0.001 | - | - | N/A |
| Molybdenum (Filtered) | mg/L | 0.001 | 0.008 | 0.009 | 12 |
| Nickel | mg/L | 0.001 | - | - | N/A |
| Nickel (Filtered) | mg/L | 0.001 | 0.075 | 0.083 | 10 |
| Phosphorus | mg/L | 0.05 | 0.1 | 0.2 | 67 |
| Selenium | mg/L | 0.001 | - | - | N/A |
| Selenium (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Zinc | mg/L | 0.001 | - | - | N/A |
| Zinc (Filtered) | mg/L | 0.001 | 0.013 | 0.012 | 8 |
| **TPH** | | | | | |
| C10-C16 | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C16-C34 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C34-C40 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| Oil and Grease | mg/L | 5 | <5 | <5 | N/A |
| F2-NAPHTHALENE | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C6 - C9 | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| C10 - C14 | mg/L | 0.05 | <0.05 | <0.05 | N/A |
| C15 - C28 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C29-C36 | mg/L | 0.1 | <0.1 | <0.1 | N/A |
| C6-C10 less BTEX (F1) | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| C6-C10 | mg/L | 0.01 | <0.01 | <0.01 | N/A |
| **BTEX** | | | | | |
| Benzene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Ethylbenzene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Toluene | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| Xylene (m & p) | mg/L | 0.002 | <0.002 | <0.002 | N/A |
| Xylene (o) | mg/L | 0.001 | <0.001 | <0.001 | N/A |
| **PAH/Phenols** | | | | | |
| Total Positive PAHs | mg/L | | NIL | NIL | N/A |
| Acenaphthene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Acenaphthylene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benz(a)anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benzo(a) pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Benzo(b,j+k)fluoranthene | mg/L | 0.00002 | <0.0002 | <0.0002 | N/A |
| Benzo(g,h,i)perylene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Chrysene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Dibenz(a,h)anthracene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Fluoranthene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Fluorene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Indeno(1,2,3-c,d)pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Naphthalene | mg/L | 0.00002 | <0.0002 | <0.0002 | N/A |
| Phenanthrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |
| Pyrene | mg/L | 0.00001 | <0.0001 | <0.0001 | N/A |

Notes to Table C4:

N/A – Not Applicable

RPD – Relative Percentage Difference

PQL - Practical Quantitation Limits

## C. Method Blanks

All method blanks returned results lower than the laboratory detection limit, therefore are acceptable.

## D. Laboratory Replicates

The average RPD for individual contaminants were exceeded for selected soil samples, generally within fill materials. Triplicate test results were issued by the laboratory and are therefore within the laboratory acceptance limits.

## E. Laboratory Spikes

Recoveries in the order of 70% to 130% are generally considered to be acceptable for inorganic material and 60% to 140% for organic material. The average percent recoveries for individual contaminants were within the quality control objectives. The results should however be qualified and may slightly under-estimate or over-estimate contaminant concentrations in certain samples (i.e. biased low or high respectively).

## G. Sample Holding Times

Samples were generally analysed within the laboratory recommended holding times. The testing was therefore conducted as per QA/QC procedures and considered acceptable.

## Conclusions

In summary, while some elevated results were found, they can generally be attributed to the relatively low concentration of contaminants.

It is also noted that the magnitude of RPDs for field replicates (i.e. blind replicates) are generally higher than those for laboratory replicates. Field replicates results generally show greater variability than laboratory replicates, because they measure both field and laboratory reproducibility.

The accuracy and precision of the water testing procedures, as inferred by the laboratory QA/QC data is considered to be of sufficient standard to allow the data reported to be used in interpret site contamination conditions.

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 101 | 0.1 | | S | G | | DJW | 19/12/16 | 7:30 | ft | | | | |
| | 0.75 | | S | G | | | | 7:35 | | 19-12-16 | | | |
| | 0.35 | | S | P 500g | | | | 7:40 | | 19-12-16 | | | |
| | 0.35 | | S | P 10L | | | | 7:40 | | | | | |
| | 0.35 | | S fibres frozen | P | | | | 7:40 | | 19-12-16 | | | |
| | 0.45 | D11 | S | G | | | | 7:45 | | 19-12-16 | | | |
| | | | | | | | | | | | | | |
| | 1.0 | | S | G | | | | 7:50 | | | | | |
| | 1.9 | | S | G | | | | 7:55 | | | | | |
| | 2.4 | | S | G | | | | 8:00 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: BSN Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 102 | 0.1 | | S | G | | BSN | 20/12/16 | 7:30 | ✓ | | | | |
| | 0.4 | | S | G | | | | 7:35 | | 20-12-16 | | | |
| | 0.5 | | S | P | ✓ | | | 7:40 | | | | | |
| | 1.0 | | S | G | | | | 7:45 | | 20-12-16 | | | |
| | 1.0 | | S | P500mg | | | | 7:50 | | | | | |
| | 1.0 | | S | 10G | | | | 8:00 | | | | | |
| | 1.0 | | S | P | ✓ | | | 8:05 | | | | | |
| | 1.5 | | S | G | | | | 8:10 | | | | | |
| | 1.5 | | S | P500mg | | | | 8:10 | | | | | |
| | 1.5 | | S | 10G | | | | 8:10 | | | | | |
| | 1.5 | | S | | ✓ | | | 8:10 | | | | | |
| | 2.0 | | S | G | | | | 8:20 | | 20-12-16 | | | |
| | 2.0 | | S | P500mg | | | | 8:25 | | | | | |
| | 2.0 | | S | 10G | | | | 8:25 | | | | | |
| | 2.0 | | S | P | ✓ | | | 8:25 | | | | | |
| | 2.3 | | S | G | | | | 8:30 | | | | | |
| | 2.8 | | S | P | ✓ | | | 8:55 | | | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 103 | 0.1 | | S | G | | DJW | 14/12/16 | 8:15 | | | | | |
| | 0.4 | | S | G | | | | 8:20 | | 19-12-16 | | | |
| | 0.6 | D12 | S | G | | | | 8:25 | | 19-12-16 | | | |
| | 1.2 | | S | G | | | | 8:30 | | 19-12-16 | | | |
| | 1.5 | | S | G | | | | 8:35 | | | | | |
| | 2.3 | | S | G | | | | 8:40 | | | | | |
| | 2.7 | | S | G | | | | 8:45 | | | | | |
| | 2.1 | | S | P500 | | | | 8:50 | | | | | |
| | 2.7 | | S | P 100 ← Small sample | | | | 8:50 | | | | | |
| | 2.9 | | S | G | | | | 9:00 | | | | | |
| | | | | | | | | | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

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|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 104 | 0.1 | | S | G | | DJW | 20/12/16 | 9:00 | ↑ | | | | |
| | 0.3 | | S | G | | | | 9:15 | | 20-12-16 | | | |
| | 0.55 | D16 | S | G | | | | 9:20 | | 20-12-16 20-12-16 | | | |
| | 2.0 | | S | G | | | | 9:25 | | | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | | | |
|---|---|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development | | |
| **Client:** Duma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive | | |
| **Project Manager:** Chris Bozinovski | **DP Lab Received** | By: DJW | Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 105 | 0.1 | | S | G | | DJW | 20/12/16 | 9:45 | ↓ | | | | |
| | 0.4 | | S | G | | | | 9:50 | | 20-12-16 | | | |
| | 0.4 | | S | P | ✓ | | | 9:50 | | | | | |
| | 1.0 | | S | G | | | | 9:55 | | 20-12-16 | | | |
| | 1.0 | | S | P | ✓ | | | 10:05 | | | | | |
| | 1.5 | | S | P | ✓ | | | 10.05 | | | | | |
| | 2.0 | | S | G | ✓ | | | 10.15 | | | | | |
| | 2.0 | | S | P | ✓ | | | 10.20 | | | | | |
| | 2.5 | | S | P | ✓ | | | 10.20 | | | | | |
| | 3.0 | | S | G | | | | 10.25 | | | | | |
| ↓ | 3.0 | | S | P | ✓ | ↓ | ↓ | 10.30 | ↓ | | | | |
| | | | | | | | | 10.35 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 106 | 0.1 | | S | G | | DJW | 20/12/16 | 10:50 | ↓ | | | | |
| | 0.3 | | S | G | | | | 10.55 | | | | | |
| | 0.5 | | S | G | | | | 11:00 | | 20-12-16 | | | |
| | 1.5 | | S | G | | | | 11:05 | | 20-12-16 | | | |
| | 2.4 | | S | G | | | | 11:15 | | | | | |
| | 2.8 | | S | G | | | | 11:20 | | | | | |
| | 0.5 | | S | P500g | | | | 11:00 | | | | | |
| | 0.5 | | S | P 10L | | | | 11:00 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 107 | 0.1 | | S | G | | DJW | 19/12/16 | 9:10 | ↓ | | | | |
| | 0.35 | | S | G | | | | 9:15 | | | | | bitumen matrix |
| | 0.4 | | S | G | | | | 9:20 | | 19-12-16 | | | |
| | 0.4 | | S | P 500g | | | | 9:40 | | | | | |
| | 0.4 | | S | P 10L | | | | 9:20 | | | | | |
| | 0.7 | | S | G | | | | 9:30 | | 19-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviro Lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 108 | 0.1 | | S | G | | DJW | 20/12/16 | 11:35 | ✱ | | | | |
| | 0.4 | | S | G | | | | 11:40 | | 20-12-16 | | | |
| | 0.4 | | S | P | | | | 11:40 | | | | | |
| | 0.4 | | S | P | | | | 11:40 | | | | | |
| | 1.0 | D17 | S | G | | | | 11:45 | | 20-12-16 20-12-16 | | | |
| | 2.0 | | S | G | | | | 11:50 | | | | | |
| | 2.9 | | S | G | | | | 11:55 | | 20-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bozinovski | **DP Lab Received** By: DJW Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 109 | 0.1 | | S | G | | DJW | 20/12/16 | | ✱ | | | | |
| | 0.4 | | S | G | | | | | | 20-12-16 | | | |
| | 0.4 | | S | P | ✓ | | | | | | | | |
| | 1.0 | | S | G | | | | | | 20-12-16 | | | |
| | 1.0 | | S | P | ✓ | | | | | | | | |
| | 1.5 | | S | P | | | | | | | | | |
| | 2.0 | | S | G, P | | | | | | | | | |
| | 2.5 | | S | G, P | | | | | | | | | |
| | 3.0 | | S | G, P | | | | | | 20-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Enviro Lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 110 | 0.1 | | S | G | | DJW | 20/12/16 | | * | | | | |
| | 0.4 | | S | G | | | | | | 20-12-16 | | | |
| | 0.8 | | S | P 500 | | | | | | 21/12/16 | | | |
| | 0.8 | | S | P 10L | | | | | | | | | |
| | 0.8 | D18 | S | G | | | | | | 19-12-16 | | | |
| | 2.2 | | S | G | | | | | | 20-12-16 | | | |
| | 2.8 | | S | G | | | | | | | | | |
| 110 | 0.4 | | Fragment | P | | DJW | 20/12/16 | | * | 21-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 111 | 0.1 | | S | G | | DJW | 19/12/16 | 9:45 | ✱ | | | | |
| | 0.3 | | | | | | | 9:55 | | 19-12-16 | | | |
| | 0.45 | | | | | | | 10:00 | | | | | |
| | 1.3 | D10 | | | | | | 10.05 | | 19-12-16 | | | |
| | 2.5 | | | | | | | 10:10 | | 19-12-16 | | | |
| ↓ | 0.3 | | S | P 500g | | ↓ | ↓ | 9:55 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | Date | Date | Date | |
| 112 | 0.1 | | S | G | 12:05 | DJW | 20/12/16 | | ✱ | | | | |
| ↓ | 0.4 | | S | G | 12:10 | ↓ | ↓ | | ↓ | 21-12-16 | | | |
| | 0.4 | | S | P 500g | 12:10 | | | | | | | | |
| ↓ | ~~0.4~~ | | S | P 10L | 12:10 | ↓ | ↓ | | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DTW Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 113 | 0.1 | | S | G | | DTW | 19/12/16 | 9:45 | ✓ | | | | |
| ↓ | 0.3 | | S | G | | ↓ | ↓ | 9:50 | ↓ | 19-12-16 | | | |
| | 0.3 | | S | P500g | | | | 9:50 | | | | | |
| | 0.3 | | S | P 10L | | | | 9:50 | | | | | |
| | 0.6 | | S | G | | | | 9:55 | | 19-12-16 | | | |
| | 0.9 | | S | G | | | | 10:05 | | 19-12-16 | | | |
| | 2.2 | | S | G | | | | 10:15 | | | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | | Date | Date | Date | |
| 114 | 0.1 | | S | G | | DJW | 19/12/16 | 10:35 | | ↓ | | | | |
| ↓ | 0.3 | | S | G | | ↓ | ↓ | 10:40 | | ↓ | 19-12-16 | | | |
| | 0.3 | | S | PSOIL | | | | 10:45 | | | | | | |
| | 0.3 | | S | PLIC | | | | 10:45 | | | | | | |
| | 0.55 | D19 | S | G | | | | 10:50 | | | 19-12-16<br>19-12-16 | | | |
| | 2.2 | | S | G | | | | 11:00 | | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviro lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Duma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Baranowski | **DP Lab Received** By: DJW Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 115 | 0.1 | | S | G | | DJW | 20/12/16 | 12:30 | ✓ | | | | |
| | 0.3 | | S | G | | | | 12:35 | | 20-12-16 | | | |
| | 1.0 | | S | G | | | | 12:40 | | 20-12-16 | | | |
| | 2.0 | | S | G | | | | 12:45 | | | | | |
| | 3.0 | | S | G | | | | 12:50 | | | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DTW Date: 20/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | Date | Date | Date | |
| 116 | 0.1 | | S | G | | DJW | 20/12/16 | 1:05 | * | | | | |
| 1 | 0.4 | | S | G | | | | 1:10 | | 20-12-16 | | | |
| | 0.4 | | S | P | ✓ | | | 1:10 | | | | | |
| | 1.0 | | S | G | | | | 1:15 | | | | | |
| | 1.0 | | S | P | ✓ | | | 1:15 | | | | | |
| | 1.5 | | S | P | ✓ | | | 1:20 | | | | | |
| | 2.0 | | S | G | | | | 1:25 | | 20-12-16 | | | |
| | 2.0 | | S | P | ✓ | | | 1:25 | | | | | |
| | 2.5 | | S | P | ✓ | | | 1:30 | | | | | |
| | 3.0 | | S | G | | | | 1:35 | | | | | |
| ↓ | 3.0 | | S | P | ✓ | ↓ | ↓ | 1:35 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 20/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | Date | Date | Date | |
| 117 | 0.1 | | S | G | | DJW | 20/12/16 | | * | | | | |
| 117 | 0.4 | | S | G | ✓ | | | | | 20-12-16 | | | |
| | 1.0 | | S | G | | | | | | | | | |
| | 1.0 | | S | P | ✓ | | | | | 20-12-16 | | | |
| | 1.5 | | S | P | ✓ | | | | | | | | |
| | 2.0 | | S | G | | | | | | | | | |
| | 2.0 | | S | P | ✓ | | | | | | | | |
| | 2.5 | | S | P | ✓ | | | | | | | | |
| | 3.0 | | S | G | | | | | | 20-12-16 | | | |
| | 3.0 | | S | P | ✓ | | | | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1 Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | Date | Date | Date | |
| 118 | 0.1 | | S | G | | DJW | 19/12/16 | 11:10 | ↓ | | | | |
| ↓ | 0.3 | | S | G | | ↓ | ↓ | 11:45 | ↓ | 19-12-16 | | | |
| | 0.3 | | S | Plastic | | | | 11:45 | | | | | |
| ↓ | 0.3 | | S | Plastic | | ↓ | ↓ | 11:20 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bozanovski | **DP Lab Received** By: DSW Date: 16/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling | | | | Storage Locn* | Lab 1[A] | Lab 2[B] | Lab 3[C] | |
| | | | | | | By | Date | Time | | | Date | Date | Date | |
| 1 | 0.05 | | S | G | | DSW | 16/12/16 | 4:10 | | * | | | | |
| | 0.1 | | S | G | | | | 4:15 | | | 19-12-16 | | | |
| | 0.2 | | S | P 500g | | | | 4:20 | | | | | | |
| | 0.3 | | S | P 10L | | | | 4:25 | | | | | | |
| | 0.4 | | S | P | | | | 4:35 | | | 19-12-16 | | | Possible coal fragments |
| | 0.7 | QA | S | G | | | | 4:45 | | | 19-12-16 | | | |
| | 1.5 | | S | G | | | | 4:55 | | | | | | |
| | 2.4 | | S | G | | | | 5:00 | | | 19-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1 — Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bednarski | **DP Lab Received** By: DJW Date: 16/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH0 | 0.05 | | S | G | | DJW | 16/12/16 | 3:10 | * | | | | |
| | 0.25 | | S | G | | | | 3:25 | | | | | |
| | 0.7 | | S | G | | | | 3:40 | | 19-12-16 | | | |
| | 1.0 | | S | G | | | | 3:50 | | | | | |
| | 2.3 | | S | G | | | | 4.00 | | 19-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bozinovski | **DP Lab Received** By: DJW Date: 19/12/17 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 121 | 0.1 | | S | G | | DJW | 19/12/16 | 11:30 | * | | | | |
| | 0.7 | | S | G | | | | 11:30 | | 19-12-16 | | | |
| | 0.3 | | S | P 500g | | | | 11:40 | | | | | |
| | 0.3 | | S | 10L | | | | 11:40 | | | | | |
| | 0.7 | | S | G | | | | 11:45 | | | | | |
| | 1.5 | D9 | S | G | | | | 11:50 | | 19-12-16 | | | |
| | 2.3 | | S | G | | | | 11:55 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bozanovski | **DP Lab Received** By: DW Date: 16/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 122 | 0.05 | | S | G | | DSW | 16/12/16 | 1:30 | ✱ | | | | |
| | 0.3 | | S | G | | | | 1:35 | | 19-12-16 | | | |
| | 0.3 | | S | P 500g | | | | 1:40 | | | | | |
| | 0.3 | | S | COC | | | | 1:45 | | | | | |
| | 0.55 | | S | P | ↵ | | | 1:55 | | | | | |
| | 0.6 | D7 | S | G | | | | 2:00 | | 19-12-16<br>19-12-16 | | | |
| | 1.0 | | S | P | ↵ | | | 2:05 | | | | | |
| | 1.4 | | S | G | | | | 2:15 | | 19-12-16 | | | |
| | 1.5 | | S | P | ↵ | | | 2:30 | | | | | |
| | 2.0 | | S | P | ↵ | | | 2:35 | | | | | |
| | 2.5 | | S | P | ↵ | | | 2:40 | | | | | |
| | 2.7 | | S | G | | | | 2:45 | | | | | |
| | 3.0 | | S | P | ↵ | ↓ | ↓ | 3:00 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DSW Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 123 | 0.1 | | S | G | | DSW | 19/12/16 | 11:35 | ↓ | | | | |
| ↓ | 0.3 | | S | G | | | | 11:45 | | | | | |
| | 0.7 | | S | G | | | | 11:55 | | 20-12-16 | | | |
| | 1.9 | -D14 | S | G | | | | 12:05 | | 20-12-16 | | | |
| | 2-8 | | S | G | | | | 12:15 | | 20-12-16 | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | | | |
|---|---|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development | | |
| **Client:** Duma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive | | |
| **Project Manager:** Chris Bezanovski | **DP Lab Received** | By: DJW | Date: 6/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 124 | 0.05 | | S | G | | DJW | 6/12/16 | 10:45 | ✓ | | | | |
| | 0.4 | | S | G | | | | 11:00 | | | | | |
| | 0.6 | | S | G | | | | 11:10 | | 9-12-16 | | | |
| | 1.5 | 05 | S | G | | | | 11:20 | | | | | |
| | 2.7 | | S | G | | ↓ | ↓ | 11:30 | ↓ | 9-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Duma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Baranowski | **DP Lab Received** By: DJW Date: 16/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 125 | 0.05 | | S | G | | DJW | 16/12/16 | 12:00 | ✱ | 1 | | | |
| ↓ | 0.3 | | S | G | | ↓ | ↓ | 12:10 | ↓ | | | | |
| | 0.5 | D6 | S | G | | | | 12:25 | | 19-12-16 19-12-16 | | | |
| | 1.5 | | S | G | | | | 12:40 | | 19-12-16 | | | |
| | 2.6 | | S | G | | | ✓ | 12:00 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: EnviroLab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DS Date: 15/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 126 | 0.05 | | S | G | | DS | 15/12/16 | 4:45 | ↓ | | | | |
| ↓ | 0.4 | | S | G | | ↓ | ↓ | 4:55 | ↓ | | | | |
| | 0.5 | | S | G | | | | 5:05 | | 19-12-16 | | | |
| | 1.2 | | S | G | | | | 5:15 | | | | | |
| | 1.8 | | S | G | | | | 5:30 | | 19-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DSW Date: 16/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 127 | 0.05 | | S | G | | DSW | 16/12/16 | 7:45 | ✓ | | | | |
| | 0.3 | | S | G | | | | 7:55 | | | | | |
| | 0.6 | | S | G | | | | 8:00 | | 19-12-16 | | | |
| | 0.6 | | S | P 500g | | | | 8:10 | | 19-12-16 | | | |
| | 0.6 | | S | P 1oL | | | | 8:20 | | | | | check Plastic for possible sheeting |
| | 0.8 | | S | G | | | | 8:30 | | 19-12-16 | | | |
| | 1.5 | | S | G | | | | 8:35 | | | | | |
| | 2.7 | | S | G | | | | 8:45 | | | | | |
| 127 | 0.6 | | Fragment | P | | | | 8:10 | | 19-12-16 | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Enviro Lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive |
| **Project Manager:** Chris Bozinovski | **DP Lab Received** By: DSW Date: 16/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 128 | 0.05 | | S | G | | DSW | 16/12/16 | 9:00 | * | | | | |
| | 0.3 | | Fragment | P | | | | 9:05 | | 20-12-16 | | | Asbestos Present |
| | 0.3 | | S | G | | | | 9:15 | | 19-12-16 | | | |
| | 0.3 | | S | P 500g | | | | 9:25 | | 20-12-16 | | | |
| | 0.3 | | S | P 10L | | | | 9:35 | | | | | |
| | 0.4 | | S | G | | | | 9:45 | | | | | |
| | 0.6 | | S | G | | | | 9:55 | | 19-12-16 | | | |
| | 1.5 | | S | G | | | | 10:05 | | 19-12-16 | | | |
| | 2.7 | | S | G | | | | 10:15 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | | | |
|---|---|---|---|
| **Project No:** 91034 | **Client Project Name:** Proposed Residential Tower Development | | |
| **Client:** Doma Constructions Pty Ltd | **Location:** 21 Honeysuckle Drive | | |
| **Project Manager:** Chris Bozanovski | | **DP Lab Received** By: DJW | Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 129 | 0.1 | | S | G | | DJW | 19/12/16 | 12:30 | | ✱ | | | | |
| | 0.2 | | S | G | | | | 12:40 | | | 20-12-16 | | | |
| | 0.3 | | S | P 500g | | | | 12:50 | | | | | | |
| | 0.3 | | S | P 10L | | | | 12:50 | | | | | | |
| | 0.4 | | S | G | | | | 1:00 | | | 20-12-16 | | | |
| | 0.6 | DUP | S | G | | | | 1:10 | | | 20-12-16<br>20-12-16 | | | |
| | 1.5 | | S | G | | | | 1:20 | | | | | | |
| | 2.7 | | S | G | | | | 1:30 | | | 20-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 15/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 130 | 0.05 | | S | G | | DJW | 15/12/16 | 12:00 | * | | | | |
| | 0.3 | | S | G | | | | 12:25 | | 15-12-16 | | | |
| | 0.3 | | S | 500g P | | | | 12:25 | | 15/12/16 | | | |
| | 0.3 | | S | 1oL P | | | | 12:25 | | | | | |
| | 0.6 | D3 | S | G | | | | 12:30 | CB | ~~15-12-16~~ | | | |
| | 0.5 | | S | P | ✓ | | | 12:35 | | | | | |
| | 1.0 | | S | P | ✓ | | | 12:40 | | | | | |
| | 1.2 | | S | G | | | | 12:45 | | 15/12/16 | | | |
| | 1.5 | | S | P | ✓ | | | 12:50 | | | | | |
| | 2.1 | | S | G | ✓ | | | 12:55 | | | | | |
| | 2.0 | | S | P | ✓ | | | 1:05 | | | | | |
| | 2.6 | | S | G | | | | 1:15 | | | | | |
| | 2.9 | | S | G | | | | 1:30 | | 15-12-16 | | | |
| | 3.0 | | S | P | ✓ | | | 1:45 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DSW Date: 15/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH1 | 0.05 | | S | G | | DSW | 15/12/16 | 2:00 | * | | | | |
| BH1 | 0.15 | | S | G | | | | 2:10 | | | | | |
| " | 0.4 | | S | G | | | | 2:20 | | 15-12-16 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 0.4 | | S | P 500g | | | | 2:40 | | 15/12/16 | | | |
| | 0.4 | | S | P 10L | | | | 2:40 | | | | | |
| | 0.5 | | S | P | ✓ | | | 2:45 | | | | | |
| | 0.7 | D4 | S | G | | | | 2:50 | | | | | |
| | 1.0 | | S | P | ✓ | | | 3:00 | | | | | |
| | 1.5 | | S | G | | | | 3:10 | | 15/12/16 | | | |
| | 1.5 | | S | P | ✓ | | | 3:20 | | | | | |
| | 2.0 | | S | P | ✓ | | | 3:30 | | | | | |
| | 2.4 | | S | G | ✓ | | | 3:40 | | | | | |
| | 2.5 | | S | P | ✓ | | | 3:50 | | | | | |
| | 2.8 | | S | G | | | | 4:00 | | | | | |
| | 3.8 | | S | P | ✓ | | | 4:15 | | | | | |

*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviro Lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 15/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 132 | 0.05 | | S | G | — | DJW | 15/12/16 | 7:45 | ✱ | | | | |
| 132 | 0.4 | | S | G | | | | 7:55 | | 15-12-16 | | | |
| 132 | 0.4 | | S | 500g P | | | | 8:00 | | 15-12-16 | | | |
| | 0.4 | | S | 10L P | | | | 8:05 | | | | | |
| | 0.3 | | S | P (combined) | | | | 8:05 | | | | | |
| | 0.45 | | S | P (combined) | | | | 8:10 | | 19-12-16 | | | |
| | 0.5 | | S | P (combined) | | | | 8:15 | | | | | |
| | 0.5 | | S | P ASS | ✓ | | | 8:20 | | | | | |
| | 0.8 | | S | G | | | | 8:25 | | | | | |
| | 1.0 | | S | P ASS | ✓ | | | 8:30 | | | | | |
| | 1.1 | | S | G | | | | 8:45 | | | | | |
| | 1.5 | | S | P G | | | | 8:55 | | 15-12-16 | | | |
| | 1.5 | | S | P ASS | ✓ | | | 9:05 | | | | | |
| | 1.9 | | S | G | | | | 9:10 | | | | | |
| | 1.9 | | S | P ASS | ✓ | ↓ | ↓ | 9:15 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

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|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DSW Date: 15/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH3 | 0.1 | | S | G | | DSW | 15/12/16 | 9:25 | ↓ | | | | |
| | 0.2 | | S | G | | | | 9:30 | | | | | |
| | 0.4 | | S | G | | | | 9:40 | | 15.12.16 | | | |
| | 0.4 | | S | P 500g | | | | 9:45 | | | | | |
| | 0.4 | | S | P 60g | | | | 9:45 | | | | | |
| | 0.8 | D1 | S | G | | | | 9:55 | | | | | |
| | 1.3 | | S | G | | | | 10:05 | | 15.12.16 | | | |
| | 1.6 | | S | G | | | | 10:15 | | | | | |
| | 2.1 | | S | G | | | | 10:20 | | 15.12.16 | | | |
| ↓ | 2.6 | | S | G | | | | 10:25 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: DJW Date: 15/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| 134 | 0.95 | | S | G | ~~to 4~~ | DJW | 15/12/16 | 10:45 | * | | | | |
| | 0.4 | | S | G | ~~to 0.5~~ | | | 10:50 | | 15-12-16 | | | |
| | 0.5 | D2 | S | G | ~~11:00~~ | | | 11:00 | | | | | |
| | 1.1 | | S | G | ~~11:10~~ | | | 11:10 | U2 | ~~15/12/16~~ | | | |
| | 1.4 | | S | G | ~~11:20~~ | | | 11:20 | | 15/12-16 | | | |
| | 1.4 | | S | 500g P | ~~11:05~~ | | | 11:25 | | 15-12-16 | | | |
| | 1.4 | | S | 10L P | ~~11:25~~ | | | 11:25 | | | | | |
| | 1.9 | | S | G | ~~11:40~~ | | | 11:40 | | | | | |
| | 2.4 | | S | G | ~~11:45~~ | | | 11:45 | | | | | |
| | 2.9 | | S | G | ~~12:00~~ | | | 12:00 | | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviro lab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

1304

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: CTB Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH-1304 | 1.0-1.45 | | S | G | ✓ | CTP | 19/12/16 | 1330 | ↓ | | | | |
| " | 2.5-2.95 | | S | G | ✓ | CTP | " | 1340 | ↓ | 20-12-16 | | | |
| " | 4.0-4.45 | | S | G | ✓ | CTP | " | 1350 | ↓ | | | | |
| " | 5.5-5.95 | | S | G | ✓ | CTP | " | 1400 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Enviolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
Geotechnics | Environment | Groundwater

103 c

# CHAIN OF CUSTODY FIELD SHEET

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|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: CTB Date: 19/12/16 |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | |

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH-103c | 1.0-1.45 | | S | G | ✓ | CTB | 14/12/16 | 1055 | ↓ | | | | |
| " | 2.5-2.95 | | S | G | ✓ | " | " | 1100 | ↓ | 20-12-16 | | | |
| " | 4.0-4.45 | | S | G | ✓ | " | " | 1103 | ↓ | | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

BH-116c

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

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|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: CTB Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☑ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH-116c | 1.0-1.45 | | S | G/P | Y | CTB | 19/12/16 | 8:30 | ✱ | | | | |
| " | 2.5-2.95 | | S | G | Y | " | 19/12/16 | 9:00 | | | | | |
| " | 4.0-4.45 | | S | G | Y | " | 19/12/16 | 9:10 | | 21-12-16 | | | |
| " | 5.5-5.95 | | S | G | Y | " | 19/12/16 | 9:20 | ↓ | 20-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1: Enviro lab

B Provide name of Lab 2

C Provide name of Lab 3

114c

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY FIELD SHEET

| | |
|---|---|
| **Project No: 91034** | **Client Project Name: Newcastle** |
| **Client: Doma Holdings (NSW) Pty Ltd** | **Location: 21 Honeysuckle Drive, Newcastle** |
| **Project Manager: Chris Bozinovski** | **DP Lab Received** By: CTB Date: 19/12/16 |

**Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S-soil W water | Container Type G-glass P-plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn* | Lab 1[A] Date | Lab 2[B] Date | Lab 3[C] Date | |
| BH-114c | 1.0-1.45 | | S | G | ✓ | CTB | 19/12/16 | 1200 | ✓ | | | | |
| ↓ | 2.5-2.95 | | S | G | ✓ | " | " | 1205 | ↓ | | | | |
| | 4.0-4.45 | | S | G | ✓ | " | " | 1210 | | | | | |
| ↓ | 5.5-5.95 | | S | G | ✓ | " | " | 1220 | ↓ | 20-12-16 | | | |
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*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

A Provide name of Lab 1
Envirolab

B Provide name of Lab 2

C Provide name of Lab 3

**Douglas Partners**
*Geotechnics I Environment I Groundwater*

129 413

# CHAIN OF CUSTODY FIELD SHEET

| | | | |
|---|---|---|---|
| **Project No:** | 91034.00 | **Client Project Name:** | Proposed Residential Tower Development |
| **Client:** | Doma Holdings (NSW) Pty Ltd | **Location:** | 21 Honeysuckle Drive, Newcastle |
| **Project Manager:** | C. Bozinovski | **DP Lab Received** | By: GM W/A Date: 5/5/17 |

**Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Field | | | | | | | | | DP Lab | For Despatch to | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type S - soil W - water | Container Type G - glass P - plastic | ASS Samples | Sampling By | Sampling Date | Sampling Time | Storage Locn * | Lab 1 [A] Date | Lab 2 [B] Date | Lab 3 [C] Date | |
| SW1 | - | - | W | G/P | - | CMF | 5/1/17 | 1100 | A | 5/1/17 | | | |
| 103 | - | BD1 | ↓ | ↓ | - | ↓ | ↓ | 1200 | ↓ | ↓ | | | |
| BH6 | - | - | | | - | | | 1300 | | | | | |
| 114 | - | - | | | - | | | 1400 | | | | | |
| 130 | - | - | ↓ | ↓ | - | ↓ | ↓ | 1430 | ↓ | ↓ | | | |
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* **Default storage:** **glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge**

A Provide name of Lab 1 ***Envirolab Services*** B Provide name of Lab 2 C Provide name of Lab 3

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | | |
|---|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 | |
| **DP Order No:** 129341 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | | |
| **Prior Storage:** Esky ☑ Fridge ☐ Shelved ☐ | | **Ph:** (02) 9910 6200 | **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH/EC | | | | | | |
| 132/0.4 | 15-12-16 | S | 1 | ✓ | ✓ | ✓ | ✓ | | | | | | * 2x 250ml |
| 132/1.5 | ↓ | ↓ | 2 | ✓ | ✓ | ✓ | ✓ | | | | | | Sample jars |
| 133/0.4 | | | 3 | ✓ | ✓ | | ✓ | | | | | | provided. |
| 133/1.3 | | | 4 | ✓ | ✓ | | ✓ | | | | | | |
| 133/2.1 | | | 5 | ✓ | ✓ | | ✓ | | | | | | 7x Combo 6 |
| 134/0.4 | | | 6 | ✓ | ✓ | | ✓ | | | | | | 5x Combo 3 |
| 134/1.4 | | | 7 | ✓ | ✓ | | ✓ | | | | | | 12x pH/EC |
| 130/0.3 * | | | 8 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 130/1.2 * | | | 9 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 130/2.9 * | | | 10 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 131/0.4 * | | | 11 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 131/1.5 * | ↓ | ↓ | 12 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | | |

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

Job No: 159296
Date Received: 16.12.16
Time Received: 10.30
Received by: JE
Temp: Cool/Ambient 14.5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

*Metals to Analyse (Please circle): As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 12 (17 Jars)

Date relinquished: 15-12-16 By: CB

Results required by:

☐ Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ✓ Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 16.12.16

Lab Ref:

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | | |
|---|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 | |
| **DP Order No:** 129341 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | | |
| **Prior Storage:** Esky ☑ Fridge ☐ Shelved ☐ | | **Ph:** (02) 9910 6200 | **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH/EC | | | | | | |
| 132/0.4 | 15-12-16 | S | 1 | ✓ | ✓ | ✓ | ✓ | | | | | | * 2x 250ml |
| 132/1.5 | ↓ | ↓ | 2 | ✓ | ✓ | ✓ | ✓ | | | | | | Sample jars |
| 133/0.4 | | | 3 | ✓ | ✓ | | ✓ | | | | | | provided. |
| 133/1.3 | | | 4 | ✓ | ✓ | | ✓ | | | | | | |
| 133/2.1 | | | 5 | ✓ | ✓ | | ✓ | | | | | | 7x Combo 6 |
| 134/0.4 | | | 6 | ✓ | ✓ | | ✓ | | | | | | 5x Combo 3 |
| 134/1.4 | | | 7 | ✓ | ✓ | | ✓ | | | | | | 12x pH/EC |
| 130/0.3 * | | | 8 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 130/1.2 * | | | 9 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 130/2.9 * | | | 10 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 131/0.4 * | | | 11 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 131/1.5 * | ↓ | ↓ | 12 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | | |

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

Job No: 159296
Date Received: 16.12.16
Time Received: 10.30
Received by: JE
Temp: Cool/Ambient 14.5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

*Metals to Analyse (Please circle): As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 12 (17 Jars)

Date relinquished: 15-12-16 By: CB

Results required by:

☐ Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ✓ Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 16.12.16

Lab Ref:

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | | |
|---|---|---|---|
| **Project No:** 91034.00 | **Suburb/Town:** NEWCASTLE | **To: Envirolab Services Pty Ltd** | |
| **DP Order No:** 129345 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | 12 Ashley Street, CHATSWOOD NSW 2067 | |
| **Prior Storage:** Esky ☒ Fridge ☒ Shelved ☐ | | **Ph: (02) 9910 6200** | **Attn:** Jacinta Hurst / Aileen Hie |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☒ (If YES, then handle, transport and store in accordance with FPM HAZID) | | | |

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH | EC | | ENVIROLAB GROUP | Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200 | | |
| ① HR1 - | | | | ✓ | ✓ | | — | — | | Job No: 159461 | | | * Level 3 for PAH |
| | | | | | | | | | | Date Received: 20/12/16 | | | |
| | | | | | | | | | | Time Received: 11:15 | | | |
| | | | | | | | | | | Received by: SKON | | | |
| | | | | | | | | | | Temp: Cool/Ambient 15°C | | | |
| ② HR1 - leach | | | | | | | | | | Cooling: Ice/Icepack | | | * please retain |
| (4 x SL soils) | | | | | | | | | | Security: Intact/Broken/None | | | for leach test |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | * Combo 3L |
| | | | | | | | | | | | | | + extra |
| | | | | | | | | | | | | | metals / trace |
| | | | | | | | | | | | | | PAH analysis |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☒ | | | 0.01mg/L | | | | | | | | | |

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

*Metals to Analyse (Please circle): As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe, Be, Bo, Mo, Se

Total number of samples in container: 10

Date relinquished: 19/12/16 By: ASM

Results required by: standard

☐ Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☒ Standard

SAMPLES RECEIVED BY LAB ELS
Please sign and date to acknowledge receipt of samples and return by email

Signature: SKong

Date: 20.12.16

Lab Ref: .....

Send results to:
Douglas Partners Pty Ltd
Address: 15 Callisteman Cl
Woodbrook, NSW, 2304
....
.....

p1 of 2

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129396 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH / EC | COAL TAR ID | Asbestos 500ml (WA) | Asbestos ID | |
| 101/0-35 | 19/12/16 | Fragment | 1 | | | | | | | ✓ | (Plastic) |
| 101/0-35 | | 5-500ml | 2 | | | | | | ✓ | | (Plastic) |
| 101/0-35 | | 5 | 3 | ✓ | ✓ | ✓ | ✓ | | | | |
| 101/0-95 | | | 4 | ✓ | ✓ | | ✓ | | | | |
| 103/0-4 | | | 5 | ✓ | ✓ | ✓ | ✓ | | | | |
| 103/0-6 | | | 6 | ✓ | ✓ | | ✓ | | | | |
| 103/1-2 | | | 7 | ✓ | ✓ | | ✓ | | | | |
| 103/2-3 | | | NTR | ✓ | ✓ | | ✓ | SA | | | |
| 107/0-4 | | | 8 | ✓ | ✓ | ✓ | ✓ | | | | |
| 107/0-7 | | | 9 | ✓ | ✓ | | ✓ | | | | |
| 111/0-3 | | | 10 | ✓ | ✓ | ✓ | ✓ | | | | |
| 111/1-3 | ↓ | | 11 | ✓ | ✓ | | ✓ | | | | |
| PQL (S) mg/kg | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | |

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

Job No: 159471
Date Received: 20/12
Time Received: 1100
Received by: PH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 22

Date relinquished: 19-12-16 By: CB

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓Standard |
|---|---|---|---|---|

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 20/12

Lab Ref: ES

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129346 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID) | | |

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH / EC | COAL TAR ID | Asbestos 500ml (WA) | Asbestos ID | | |
| 111/2.5 | 19-12-16 | S | 12 | ✓ | ✓ | | ✓ | | | | | |
| 113/0.6 | | Bitumen | 13 | | | | | ✓ | | | | Bitumen Fragment. |
| 113/0.3 | | S | 14 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 113/0.9 | | | 15 | ✓ | ✓ | | ✓ | | | | | |
| 114/0.3 | | | 16 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 114/0.55 | | | 17 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 118/0.3 | | | 18 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 121/0.3 | | | 19 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 121/1.5 | | | 20 | ✓ | ✓ | | ✓ | | | | | |
| D13 | | | 21 | ✓ | ✓ | | ✓ | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

3H103/0.6 J.E

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 22

Date relinquished: 19-12-16 By: CB

Results required by:

Same day | 24 hours | 48 hours | 72 hours | ✓Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 20/12

Lab Ref:

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

(COPY)

p1 of 3

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129396 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | PH/ EC | Coal TAR ID | Asbestos 500ml (WA) | | | | |
| 119/0.3 | 16/12/16 | S | 1 | ✓ | ✓ | ✓ | ✓ | | | | | | * 2x250ml |
| 119/0.7 | | ↓ | 2 | ✓ | ✓ | ✓ | ✓ | | | | | | Sample Jars (all soils) |
| 119/2.4 | | ↓ | 3 | ✓ | ✓ | | ✓ | | | | | | |
| 119/0.4 | | Bitumen | 4 | | | | | ✓ | | | | | Plastic bag. |
| 120/0.3 | | S | 5 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 120/2.3 | | ↓ | 6 | ✓ | ✓ | | ✓ | | | | | | 11 Combo 6 |
| 122/0.3 | | ↓ | 7 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 122/0.6 | | ↓ | 8 | ✓ | ✓ | | ✓ | | | | | | P/S retain |
| 122/1.4 | | ↓ | 9 | ✓ | ✓ | ✓ | ✓ | | | | | | 2nd 250ml |
| 124/0.6 | | ↓ | 10 | ✓ | ✓ | ✓ | ✓ | | | | | | Sample for |
| 124/2.7 | | ↓ | 11 | ✓ | ✓ | | ✓ | | | | | | possible |
| 125/0.5 | ↓ | ↓ | 12 | ✓ | ✓ | ✓ | ✓ | | | | | | leach |
| PQL (S) mg/kg | | | | | | | | | | | | | Testing. |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | | |

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 159472
Date Received: 20.12.16
Time Received: 11:30
Received by: JE
Temp: Cool/Ambient 14.7°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 28

Date relinquished: 19-12-16 By: CS

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓ Standard |
|---|---|---|---|---|

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 20.12.16 11.30

Lab Ref: ELS

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129346 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH / EC | Coal TAR ID | Asbestos 500ml (WA) | | Asbestos ID | |
| 125/1.5 | 16/12/16 | S | 13 | ✓ | ✓ | | ✓ | | | | | |
| 126/0.5 | 15/12/16 | | 14 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 126/1.8 | ↓ | | 15 | ✓ | ✓ | | ✓ | | | | | |
| 127/0.6 | 16/12/16 | | 16 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 127/0.8 | | | 17 | ✓ | ✓ | | ✓ | | | | | |
| 127/2.7 | | | 18 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 127/0.6 | | ↓ | 19 | | | | | | ✓ | | | (500ml Plastic) |
| 127/0.6 | | Fragment | 20 | | | | | | | | ✓ | Fragment |
| 128/0.3 | | S | 21 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 128/0.6 | | | 22 | ✓ | ✓ | | ✓ | | | | | |
| 128/1.5 | | | 23 | ✓ | ✓ | | ✓ | | | | | |
| 128/0.3 | ↓ | ↓ | 24 | | | | | | ✓ | | | (500ml Plastic) |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 28

Date relinquished: 19-12-16 By: CB

Results required by:

Same day | 24 hours | 48 hours | 72 hours | ✓Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date:

Lab Ref: 159472

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129346 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH/EC | COAL TAR ID | Asbestos 500ml (WA) | | Asbestos ID | |
| 128/0-3 | 16/12/16 | Fragment | 25 | | | | | | | | ✓ | Fragment |
| D7 | ↓ | S | 26 | ✓ | ✓ | | ✓ | | | | | |
| D6 | ↓ | S | 27 | ✓ | ✓ | | ✓ | | | | | |
| 132/0.95 | 15/12/16 | Bitumen | 28 | | | | | ✓ | | | | Bitumen Fragment (Plastic bag) |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 28

Date relinquished: 19-12-16 By: CS

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓ Standard |
|---|---|---|---|---|

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date:

Lab Ref: 159472

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129453 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☑ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH/EC | COAC TPH ID | ASBESTOS 500ml (WA) | ASBESTOS ID | Cl/SO4 | |
| 123/0-7 | 19-12-16 | S | 1 | ✓ | ✓ | ✓ | ✓ | | | | | *2x250ml Sample Jars (Please retain 2nd 250ml Jar for possible leach test.) |
| 123/1-9 | | | 2 | ✓ | ✓ | | ✓ | | | | | |
| 129/0-3 | | | 3 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 129/0-6 | | | 4 | ✓ | ✓ | | ✓ | | | | | |
| 129/2-7 | | | 5 | ✓ | ✓ | | ✓ | | | | | |
| 129/0-4 | | Between 5 (500ml) | 6 | | | | | ✓ | | | | - Plastic |
| 128/0-3 | | | 7 | | | | | | ✓ | | | - Plastic |
| 128/0-3 | | Fragment | 8 | | | | | | | ✓ | | - Plastic + Aggressively |
| 103/2.5-2.95 | | S | 9 | | | | ✓ | | | | ✓ | |
| 116/5.5-5.95 | | | 10 | | | | ✓ | | | | ✓ | |
| 130/5.5-5.95 | | | 11 | | | | ✓ | | | | ✓ | |
| 114/5.5-5.95 | | | 12 | | | | ✓ | | | | ✓ | |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 9-1

Date relinquished: 20-12-16 By: JB

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓Standard |
|---|---|---|---|---|

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

Job No: 150554
Date Received: 21.12
Time Received: 10:15
Received by: JAC
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:
Date: 21.12
Lab Ref: 150554

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91034 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129453 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☑ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH / EC | COAL TAR ID | ASBESTOS 500ml (WA) | Asbestos ID | | |
| 116/0.4 | 20-12-16 | S | 13 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 116/2.0 | | | 14 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 115/0.3 | | | 15 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 115/1.0 | | | 16 | ✓ | ✓ | | ✓ | | | | | |
| 105/0.4 | | | 17 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 105/1.0 | | | 18 | ✓ | ✓ | | ✓ | | | | | |
| 109/0.4 | | | 19 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 109/1.0 | | | 20 | ✓ | ✓ | | ✓ | | | | | |
| 109/3.0 | | | 21 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 112/0.4 | | | NR. | ✓ | ✓ | ✓ | ✓ | | | | | |
| 110/0.4 | | | 22 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 110/2.2 | ↓ | ↓ | 23 | ✓ | ✓ | | ✓ | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 41

Date relinquished: 20-12-16 By: CB

Results required by:

Same day | 24 hours | 48 hours | 72 hours | ✓Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature: [signature]

Date: 21.12

Lab Ref: 159554

Send results to:
Douglas Partners Pty Ltd
Address:
.....
.....
....
.....

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91039 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129453 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☑ Fridge ☐ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH / EC | COAL TAR ID | ASBESTOS 500mL (WA) | | ASBESTOS (ID) | | |
| 108/0.4 | 20-12-16 | S | 24 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 108/1.0 | ↓ | ↓ | 25 | ✓ | ✓ | | ✓ | | | | | | |
| 108/2.9 | | | 26 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 102/0.4 | | | 27 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 102/1.0 | | | 28 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 102/2.0 | | | 29 | ✓ | ✓ | | ✓ | | | | | | |
| 106/0.5 | | | 30 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 106/1.5 | | | 31 | ✓ | ✓ | | ✓ | | | | | | |
| 104/0.3 | | | 32 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 104/0.55 | | | 33 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 117/0.4 | | | 34 | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 117/1.0 | ↓ | ↓ | 35 | ✓ | ✓ | | ✓ | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 91

Date relinquished: 20-12-16 By: CB

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓ Standard |
|---|---|---|---|---|

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature:

Date: 21.12

Lab Ref: 150551

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

## CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | |
|---|---|---|
| **Project No:** 91039 | **Suburb/Town:** NEWCASTLE | **To:** Envirolab Services Pty Ltd<br>12 Ashley Street, CHATSWOOD NSW 2067 |
| **DP Order No:** 129453 | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | |
| **Prior Storage:** Esky ☑ Fridge ☑ Shelved ☐ | | **Ph:** (02) 9910 6200 **Attn:** Jacinta Hurst / Aileen Hie |

**Do samples contain 'potential' HBM?** Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)

| Sample | | | | Analytes | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | pH/EC | | | | | | |
| 117/3.0 | 20-12-16 | S | 36 | ✓ | ✓ | | ✓ | | | | | | |
| D14 | ↓ | ↓ | 37 | ✓ | ✓ | | | | | | | | |
| D15 | | | 38 | ✓ | ✓ | | | | | | | | |
| D17 | | | 39 | ✓ | ✓ | | | | | | | | |
| D16 | | | 40 | ✓ | ✓ | | | | | | | | |
| Extra D18 | | | 41 | | | | | | | | | | |
| 121/2.7 | | | 42 | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | | |

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

*Metals to Analyse (Please circle) ~~As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe~~

Total number of samples in container: 41

Date relinquished: 20-12-16 By: CB

Results required by:

| Same day | 24 hours | 48 hours | 72 hours | ✓ Standard |
|---|---|---|---|---|

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature: JEA
Date: 21.12
Lab Ref: 159554

Send results to:
Douglas Partners Pty Ltd
Address:

**Douglas Partners**
Geotechnics | Environment | Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET (2)

| | | | |
|---|---|---|---|
| **Project No:** 91039 | **Suburb/Town:** NEWCASTLE | **To: Envirolab Services Pty Ltd** | |
| **DP Order No:** | **DP Contact Person:** Chris Bozinovski / Matthew Blackert | 12 Ashley Street, CHATSWOOD NSW 2067 | |
| **Prior Storage:** Esky ☐ Fridge ☑ Shelved ☐ | | **Ph: (02) 9910 6200** | **Attn:** Jacinta Hurst / Aileen Hie |
| **Do samples contain 'potential' HBM?** Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID) | | | |

| Sample | | | | Analytes | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DP ID | Date Sampled | Type S-soil W-water | Lab ID | TRH BTEX PAH | Metals * | OCP / OPP / PCB | Scr Suite | ASBESTOS 500ml (WA) | ASBESTOS ID | pH/EC | | |
| 116/4m | 19-12-16 | S | 1 | | | | ✓ | | | | | |
| 112/0.4 | 20-12-16 | ↓ | 2 | ✓ | ✓ | | | | | ✓ | | Combo 3. |
| 101/0.3 | 19-12-16 | ↓ | 3 | | | | | ✓ | | | | |
| 101/0.3 | " | Fragment | 4 | | | | | | ✓ | | | |
| 110/0.4 | 20-12-16 | S | 5 | | | | | ✓ | | | | |
| 110/0.4 | 20-12-16 | Fragment | 6 | | | | | | ✓ | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| PQL (S) mg/kg | | | | | | | | | | | | |
| PQL (W) mg/L | ANZECC PQLs req'd for all water analytes ☐ | | | | | | | | | | | |

ENVIROLAB GROUP

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

Job No: 159640
Date Received: 22.12
Time Received: 11:00
Received by: JAG
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

*Metals to Analyse (Please circle): As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe

Total number of samples in container: 6

Date relinquished: 21-12-16 By: CB

Results required by:

☐ Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ✓ Standard

SAMPLES RECEIVED BY LAB
Please sign and date to acknowledge receipt of samples and return by email

Signature: JEA

Date: 22.12

Lab Ref: 159640

Send results to:
Douglas Partners Pty Ltd
Address:
.....
.....
....
.....

**Douglas Partners**
Geotechnics / Environment / Groundwater

# CHAIN OF CUSTODY DESPATCH SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Project No:** | 91034.00 | **Suburb:** | Newcastle | **To:** | Envirolab Services Pty Ltd |
| **Project Name:** | Newcastle | **Order Number** | 129412 | | 12 Ashley Street Chatswood NSW 2067 |
| **Project Manager:** | C. Bozinovski | **Sampler:** | C. Falla | **Attn:** | Sample Receipt |
| **Emails:** | chris.bozinovski@douglaspartners.com.au / caitlyn.falla@douglaspartners.com.au | | | **Phone:** | 02 9910 6200 |
| **Date Required:** | Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑ | | | **Email:** | sample.receipt@envirolab.com.au |
| **Prior Storage:** | ☑ Esky ☐ Fridge ☐ Shelved | Do samples contain 'potential' HBM? | Yes ☐ | No ☑ | (If YES, then handle, transport and store in accordance with FPM HAZID) |

| Sample ID | Lab ID | Date Sampled | Sample Type: S - soil W - water | Container Type: G - glass P - plastic | Analytes: 14 Heavy Metals | TRH and BTEX | PAH (low) | Oil & Grease | pH, EC | Turbdity | Total Nitrogen | Total Phosphorus | | Notes/preservation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW1 | 1 | 05/01/17 | W | G, P | X | X | X | X | X | X | X | X | | Combo 3L |
| 103 | 2 | | | | | | | | | | | | | |
| BD1 | 3 | | | | | | | | | | | | | |
| 113 | 4 | | | | | | | | | | | | | |
| 114 | 5 | | | | | | | | | | | | | |
| 130 | 6 | | | | | | | | | | | | | |

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

Job No: 159946
Date Received: 9.1.17
Time Received: 11.00
Received by: PR
Temp: Cool/Ambient
Cooling: Ice/Icepack • 252
Security: Intact/Broken/None

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PQL (S) mg/kg** | * ANZECC * | | | | | | | | | | | **ANZECC PQLs req'd for all water analytes** ☑ except low PAH only. | | |

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

**Lab Report/Reference No:**

**Metals to Analyse:** As, Cd, Cr, Cu, Pb, Mn, Hg, Mo, Ni, Zn, Fe, Be, Bo, Se

**Total number of samples in container:** 6 **Relinquished by:** CMF **Transported to laboratory by:** TNT overnight courier

**Send Results to:** Douglas Partners Pty Ltd **Address** Email addresses as above **Phone:** 02 49609600 **Fax:** 02 49609601

**Signed:** **Received by:** P.Raj 9.1.17 11:00 **Date & Time:**

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

# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159296** |
| **Date Sample Received** | 16/12/2016 |
| **Date Instructions Received** | 16/12/2016 |
| **Date Results Expected to be Reported** | **19/12/2016** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 12 soils |
| **Turnaround Time Requested** | 24hr |
| **Temperature on receipt (°C)** | 14.5 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on 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
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

| *Sample Id* | *vTRH(C6-C10)/BTEXN in Soil* | *svTRH (C10-C40) in Soil* | *PAHs in Soil* | *Organochlorine Pesticides in soil* | *Organophosphorus Pesticides* | *PCBs in Soil* | *Acid Extractable metals in soil* | *Electrical Conductivity 1:5 soil:water* | *pH 1:5 soil:water* |
|---|---|---|---|---|---|---|---|---|---|
| 132-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 132-1.5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 133-0.4 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 133-1.3 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 133-2.1 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 134-0.4 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 134-1.4 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 130-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 130-1.2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 130-2.9 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 131-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 131-1.5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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

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

# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034.00, Newcastle |
| **Envirolab Reference** | **159461** |
| **Date Sample Received** | 20/12/2016 |
| **Date Instructions Received** | 20/12/2016 |
| **Date Results Expected to be Reported** | **27/12/2016** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 2 Waters |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 15.0 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |



***Sample and Testing Details on 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
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

| *Sample Id* | *vTRH(C6-C10)/BTEXN in Water* | *svTRH (C10-C40) in Water* | *PAHs in Water - Trace Level* | *HM in water - total* | *Electrical Conductivity* | *pH* | *On Hold* |
|---|---|---|---|---|---|---|---|
| HR1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| HR1-Leach | | | | | | | ✓ |

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

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

# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159471** |
| **Date Sample Received** | 20/12/2016 |
| **Date Instructions Received** | 20/12/2016 |
| **Date Results Expected to be Reported** | **21/12/2016** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 20 soils 1 material |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 14.5 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on 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
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

| *Sample Id* | *vTRH(C6-C10)/BTEXN in Soil* | *svTRH (C10-C40) in Soil* | *PAHs in Soil* | *Organochlorine Pesticides in soil* | *Organophosphorus Pesticides* | *PCBs in Soil* | *Acid Extractable metals in soil* | *Electrical Conductivity 1:5 soil:water* | *pH 1:5 soil:water* | *Presence of Coal Tar** | *Asbestos ID - soils NEPM* | *Asbestos ID - materials* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101-0.35 | | | | | | | | | | | | ✓ |
| 101-0.35 | | | | | | | | | | | ✓ | |
| 101-0.35 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 101-.045 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 103-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 103-0.6 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 103-1.2 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 107-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 107-0.7 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 111-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 111-1.3 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 111-2.5 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 113-0.6 | | | | | | | | | | ✓ | | |
| 113-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 113-0.9 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 114-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 114-0.55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 118-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 121-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 121-1.5 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| D13 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159471-A** |
| **Date Sample Received** | 20/12/2016 |
| **Date Instructions Received** | 03/01/2017 |
| **Date Results Expected to be Reported** | **10/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | Additional testing |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 14.5 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on following page***

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| *Sample Id* | *Metals in TCLP USEPA1311* | *PAHs in TCLP (USEPA 1311)* | *Metals-ASLP Neutral (ICP-MS)* | *sTRH in water leach* | *PAHs - ASLP Trace Level* | *Metals-ASLP Sea Water (ICP-MS)* | *sTRH in sea water leach* | *PAHs - ASLP Sea Water Trace Level* | *On Hold* |
|---|---|---|---|---|---|---|---|---|---|
| 101-0.35 | | | | | | | | | ✓ |
| 101-0.35 | | | | | | | | | ✓ |
| 101-0.35 | ✓ | ✓ | | | | | | | |
| 101-0.45 | | | | | | | | | ✓ |
| 103-0.4 | | | | | | | | | ✓ |
| 103-0.6 | | | | | | | | | ✓ |
| 103-1.2 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 107-0.4 | ✓ | ✓ | | | | | | | |
| 107-0.7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 111-0.3 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 111-1.3 | | | | | | | | | ✓ |
| 111-2.5 | | | | | | | | | ✓ |
| 113-0.6 | | | | | | | | | ✓ |
| 113-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 113-0.9 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 114-0.3 | | | | | | | | | ✓ |
| 114-0.55 | | | | | | | | | ✓ |
| 118-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 121-0.3 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 121-1.5 | | | | | | | | | ✓ |
| D13 | | | | | | | | | ✓ |
| 101 - [TRIPLICATE]-0.35 | | | | | | | | | ✓ |

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

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159472** |
| **Date Sample Received** | 20/12/2016 |
| **Date Instructions Received** | 20/12/2016 |
| **Date Results Expected to be Reported** | **04/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 24 soils 4 material |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 14.5 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on 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* | *PCBs in Soil* | *Acid Extractable metals in soil* | *Electrical Conductivity 1:5 soil:water* | *pH 1:5 soil:water* | *Presence of Coal Tar** | *Asbestos ID - soils NEPM* | *Asbestos ID - materials* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 119-0.7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 119-2.4 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 119-0.4 | | | | | | | | | | ✓ | | |
| 120-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 120-2.3 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 122-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 122-0.6 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 122-1.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 124-0.6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 124-2.7 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 125-0.5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 125-1.5 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 126-0.5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 12+-1.8 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 127-0.6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 127-0.6 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 127-2.7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 127-0.6 | | | | | | | | | | | ✓ | |
| 127-0.6 | | | | | | | | | | | | ✓ |
| 128-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 128-0.6 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 128-1.5 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 128-0.3 | | | | | | | | | | | ✓ | |
| 128-0.3 | | | | | | | | | | | | ✓ |
| D7 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| D6 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | |
| 132-0.45 | | | | | | | | | | ✓ | | |

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159472-A** |
| **Date Sample Received** | 20/12/2016 |
| **Date Instructions Received** | 03/01/2017 |
| **Date Results Expected to be Reported** | **10/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | Additional testing |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 14.5 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on following page***

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| *Sample Id* | *Metals in TCLP USEPA1311* | *PAHs in TCLP (USEPA 1311)* | *Metals-ASLP Neutral (ICP-MS)* | *sTRH in water leach* | *PAHs - ASLP Trace Level* | *Metals-ASLP Sea Water (ICP-MS)* | *sTRH in sea water leach* | *PAHs - ASLP Sea Water Trace Level* | *On Hold* |
|---|---|---|---|---|---|---|---|---|---|
| 119-0.3 | ✓ | ✓ | | | | | | | |
| 119-0.7 | | | | | | | | | ✓ |
| 119-2.4 | | | | | | | | | ✓ |
| 119-0.4 | | | | | | | | | ✓ |
| 120-0.3 | | | | | | | | | ✓ |
| 120-2.3 | | | | | | | | | ✓ |
| 122-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 122-0.6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 122-1.4 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 124-0.6 | | | | | | | | | ✓ |
| 124-2.7 | | | | | | | | | ✓ |
| 125-0.5 | | | | | | | | | ✓ |
| 125-1.5 | | | | | | | | | ✓ |
| 126-0.5 | | | | | | | | | ✓ |
| 126-1.8 | | | | | | | | | ✓ |
| 127-0.6 | | | | | | | | | ✓ |
| 127-0.6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 127-2.7 | | | | | | | | | ✓ |
| 127-0.6 | | | | | | | | | ✓ |
| 127-0.6 | | | | | | | | | ✓ |
| 128-0.3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 128-0.6 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 128-1.5 | | | | | | | | | ✓ |
| 128-0.3 | | | | | | | | | ✓ |
| 128-0.3 | | | | | | | | | ✓ |
| D7 | | | | | | | | | ✓ |
| D6 | | | | | | | | | ✓ |
| 132-0.45 | | | | | | | | | ✓ |

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

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159554-A** |
| **Date Sample Received** | 21/12/2016 |
| **Date Instructions Received** | 03/01/2017 |
| **Date Results Expected to be Reported** | **10/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | Additional testing |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 16.1 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on following page***

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| *Sample Id* | *Metals in TCLP USEPA1311* | *PAHs in TCLP (USEPA 1311)* | *Metals-ASLP Neutral (ICP-MS)* | *sTRH in water leach* | *PAHs - ASLP Trace Level* | *Metals-ASLP Sea Water (ICP-MS)* | *sTRH in sea water leach* | *PAHs - ASLP Sea Water Trace Level* | *On Hold* |
|---|---|---|---|---|---|---|---|---|---|
| 123-0.7 | | | | | | | | | ✓ |
| 123-1.9 | | | | | | | | | ✓ |
| 129-0.3 | ✓ | ✓ | | | | | | | |
| 129-0.6 | | | | | | | | | ✓ |
| 129-2.7 | | | | | | | | | ✓ |
| 129-0.4 | | | | | | | | | ✓ |
| 128-0.3 | | | | | | | | | ✓ |
| 128-0.3 | | | | | | | | | ✓ |
| 103-2.5-2.95 | | | | | | | | | ✓ |
| 116-5.5-5.95 | | | | | | | | | ✓ |
| 130-5.5-5.95 | | | | | | | | | ✓ |
| 114-5.5-5.95 | | | | | | | | | ✓ |
| 116-0.4 | | | | | | | | | ✓ |
| 116-2.0 | | | | | | | | | ✓ |
| 115-0.3 | | | | | | | | | ✓ |
| 115-1.0 | | | | | | | | | ✓ |
| 105-0.4 | | | | | | | | | ✓ |
| 105-1.0 | | | | | | | | | ✓ |
| 109-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 109-1.0 | | | | | | | | | ✓ |
| 109-3.0 | | | | | | | | | ✓ |
| 110-0.4 | ✓ | ✓ | | | | | | | |
| 110-2.2 | | | | | | | | | ✓ |
| 108-0.4 | | | | | | | | | ✓ |
| 108-1.0 | | | | | | | | | ✓ |
| 108-2.9 | | | | | | | | | ✓ |
| 102-0.4 | | | | | | | | | ✓ |
| 102-1.0 | | | | | | | | | ✓ |
| 102-2.0 | | | | | | | | | ✓ |
| 106-0.5 | | | | | | | | | ✓ |
| 106-1.5 | | | | | | | | | ✓ |
| 104-0.3 | | | | | | | | | ✓ |
| 104-0.55 | | | | | | | | | ✓ |
| 117-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 117-1.0 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 117-3.0 | | | | | | | | | ✓ |
| D14 | | | | | | | | | ✓ |
| D15 | | | | | | | | | ✓ |
| D16 | | | | | | | | | ✓ |
| D17 | | | | | | | | | ✓ |
| D18 | | | | | | | | | ✓ |

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| *Sample Id* | *Metals in TCLP USEPA1311* | *PAHs in TCLP (USEPA 1311)* | *Metals-ASLP Neutral (ICP-MS)* | *sTRH in water leach* | *PAHs - ASLP Trace Level* | *Metals-ASLP Sea Water (ICP-MS)* | *sTRH in sea water leach* | *PAHs - ASLP Sea Water Trace Level* | *On Hold* |
|---|---|---|---|---|---|---|---|---|---|
| 121-2.7 | | | | | | | | | ✓ |
| 123 - [TRIPLICATE]-0.7 | | | | | | | | | ✓ |
| 109 - [TRIPLICATE]-0.4 | | | | | | | | | ✓ |
| 102 - [TRIPLICATE]-1.0 | | | | | | | | | ✓ |
| D15 - [TRIPLICATE] | | | | | | | | | ✓ |

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

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski, Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159640** |
| **Date Sample Received** | 22/12/2016 |
| **Date Instructions Received** | 22/12/2016 |
| **Date Results Expected to be Reported** | **06/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 4 soils 2 material |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 17.9 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on following page***

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| *Sample Id* | *vTRH(C6-C10)/BTEXN in Soil* | *svTRH (C10-C40) in Soil* | *PAHs in Soil* | *Acid Extractable metals in soil* | *Electrical Conductivity 1:5 soil:water* | *pH 1:5 soil:water* | *Asbestos ID - soils NEPM* | *Asbestos ID - materials* | *Chromium Suite* |
|---|---|---|---|---|---|---|---|---|---|
| 116-4 | | | | | | | | | ✓ |
| 112-0.4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 101-0.3 | | | | | | | ✓ | | |
| 101-0.3 | | | | | | | | ✓ | |
| 110-0.4 | | | | | | | ✓ | | |
| 110-0.4 | | | | | | | | ✓ | |

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

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski / Caitlyn Falla |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034.00, Newcastle |
| **Envirolab Reference** | **159946** |
| **Date Sample Received** | 09/01/2017 |
| **Date Instructions Received** | 09/01/2017 |
| **Date Results Expected to be Reported** | **13/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 6 Waters |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 25.2 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |



***Sample and Testing Details on following page***

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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* | *Electrical Conductivity* | *Oil & Grease (LLE)* | *pH* | *Total Nitrogen in water* | *Turbidity* | *Metals in Waters - Acid extractable* |
|---|---|---|---|---|---|---|---|---|---|---|
| SW1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 103 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| BD1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 116 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 114 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 130 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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# SAMPLE RECEIPT ADVICE

| Client Details | |
|---|---|
| **Client** | Douglas Partners Newcastle |
| **Attention** | Chris Bozinovski / Matthew Blackert |

| Sample Login Details | |
|---|---|
| **Your Reference** | 91034, Newcastle |
| **Envirolab Reference** | **159954** |
| **Date Sample Received** | 09/01/2017 |
| **Date Instructions Received** | 09/01/2017 |
| **Date Results Expected to be Reported** | **13/01/2017** |

| Sample Condition | |
|---|---|
| **Samples received in appropriate condition for analysis** | YES |
| **No. of Samples Provided** | 7 Soils |
| **Turnaround Time Requested** | Standard |
| **Temperature on receipt (°C)** | 23.0 |
| **Cooling Method** | Ice |
| **Sampling Date Provided** | YES |

| Comments |
|---|
| **Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples** |
| |

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@envirolabservices.com.au | Email: jhurst@envirolabservices.com.au |

***Sample and Testing Details on 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* | *PCBs in Soil* | *Acid Extractable metals in soil* | *Electrical Conductivity 1:5 soil:water* | *pH 1:5 soil:water* |
|---|---|---|---|---|---|---|---|---|---|
| 106-0.1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 106-0.3 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 111-0.1 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 117-0.1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 123-0.1 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 127-0.05 | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ |
| 132-0.05 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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

# Appendix D

SCE Letter of 2 September 2014 (2% Stabilised DGB20)
Architectural Drawings:
- DA-0001 Cover
- DA-0200 Basement Plan
- DA-0201 Ground Floor Plan
- DA-0501 Site Elevations
- DA-0502 Internal Elevations
- DA-0601 Site Sections

Drawing 1 - Test Location Plan
Drawing 2 - Surface Water Sample Location Plan

Proprietor:
SCE Resources Pty Ltd
ABN 96 000 984 314
OneSteel Industrial Estate
via Ingall Street Mayfield
PO Box 311, Mayfield
NSW 2304 Australia
[T] 02 4949 2844
[F] 02 4961 6792
[E] steelstone@sce-aust.com

2nd September 2014

Daracon
17 James St
Wallsend NSW 2287

At: Andrew

**Re: 2% Stabilised DGB20 supplied to Lee Wharf project**

SCE Resources confirms DGB20 material conforming to RMS (formerly RTA) specification 3051 Ed5 was stabilised with 2% SSC40 binder through a computer controlled pugmill and supplied to Daracon for use in their project at Lee Wharf.
A total of 152.22t of stabilised DGB was supplied.

For further information, please contact either Jeff Adams 0458 033753 (Senior Sales and Marketing Manager) or the undersigned.

For and on behalf of

SCE Resources

Shayne McKenzie
Technical Coordinator
SCE Materials and Recycling
02 4949 2800

Attachments;

DGB20 test results

SJB Architects

Honeysuckle
50 Honeysuckle Drive, Newcastle
NSW 2300

SJB Architects
Level 2, 490 Crown Street
Surry Hills NSW
2010 Australia
T 61 2 9380 9911
F 61 2 9380 9922

Project Number:5485
Date: 29.05.17
Client: DOMA Group

Contents

DRAWING LIST


| Sheet Number | Sheet Name | Current Revision | Date |
|---|---|---|---|
| 0001 | COVER | 10 | 29.05.17 |
| 0103 | SITE PLAN/ SITE ANALYSIS | 10 | 29.05.17 |
| 0200 | BASEMENT PLAN | 10 | 29.05.17 |
| 0201 | GROUND FLOOR PLAN | 10 | 29.05.17 |
| 0202 | LEVEL 01 FLOOR PLAN | 10 | 29.05.17 |
| 0203 | LEVEL 02 FLOOR PLAN | 10 | 29.05.17 |
| 0204 | LEVEL 03 - 06 FLOOR PLAN | 10 | 29.05.17 |
| 0205 | ROOF PLAN | 10 | 29.05.17 |
| 0220 | APARTMENT TYPES - 1 BEDS | 10 | 29.05.17 |
| 0221 | APARTMENT TYPES - 2 BEDS | 10 | 29.05.17 |
| 0222 | APARTMENT TYPES - 3 BEDS | 10 | 29.05.17 |
| 0250 | ADAPTABLE APARTMENTS | 10 | 29.05.17 |
| 0501 | SITE ELEVATIONS | 10 | 29.05.17 |
| 0502 | INTERNAL ELEVATIONS | 10 | 29.05.17 |
| 0601 | SITE SECTIONS | 10 | 29.05.17 |
| 3000 | SHADOW ANALYSIS - PROPOSED | 10 | 29.05.17 |
| 3001 | SHADOW ANALYSIS - COMPLIANT | 10 | 29.05.17 |
| 3101 | GFA ANALYSIS | 10 | 29.05.17 |
| 3201 | SEPP 65 ANALYSIS - SOLAR | 10 | 29.05.17 |
| 3202 | SEPP 65 ANALYSIS - VENTILATION | 10 | 29.05.17 |
| 3203 | SEPP 65 ANALYSIS - DEEP SOIL | 10 | 29.05.17 |
| 4000 | EXTERNAL FINISHES | 10 | 29.05.17 |
| 4101 | PHOTOMONTAGE | 10 | 29.05.17 |
| 4102 | PHOTOMONTAGE | 10 | 29.05.17 |
| 4103 | PHOTOMONTAGE | 10 | 29.05.17 |

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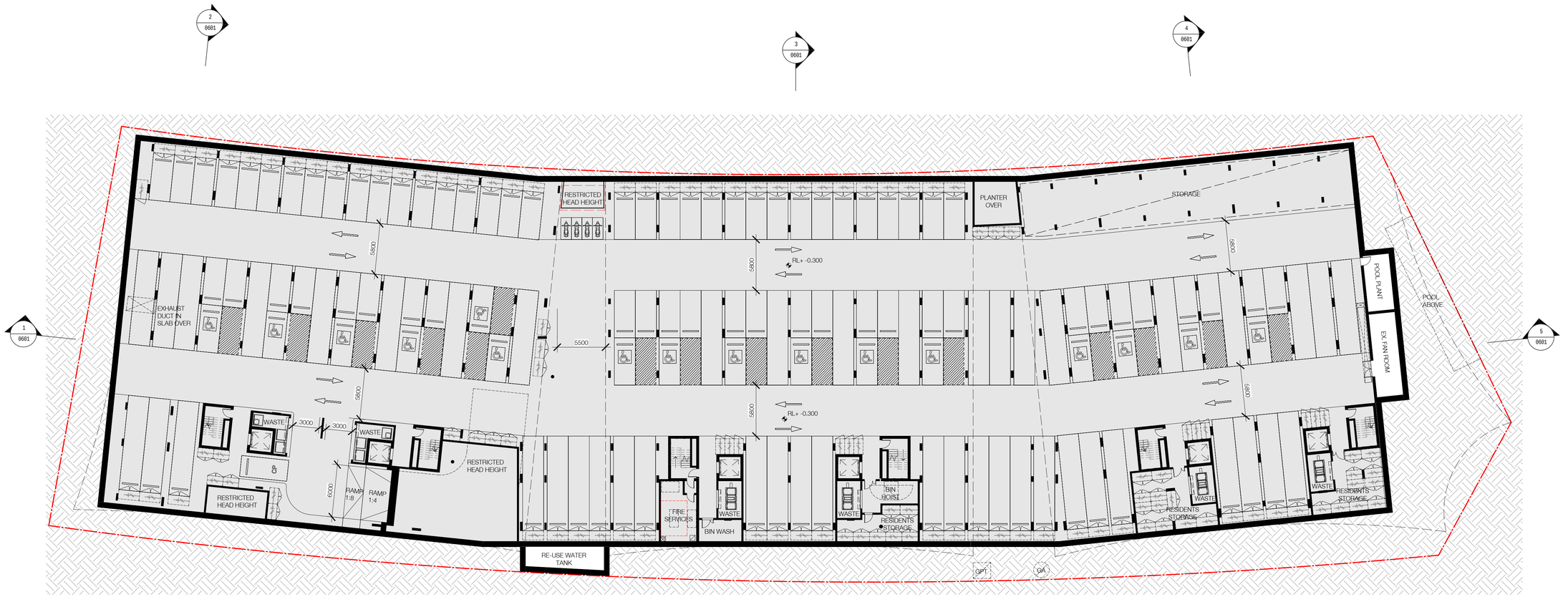
Nominated Architects: Adam Haddow-7188 | John Pradel-7004

**FOR APPROVAL**

| Rev | Date | Revision | By | Chk. |
|---|---|---|---|---|
| 1 | 17.03.17 | DEVELOPMENT APPLICATION ISSUE | | |
| 3 | 23.03.17 | REVISED CAR PARK NUMBER | | |
| 4 | 10.04.17 | DA SUBMISSION | | |
| 6 | 25.05.17 | FOR COORDINATION | | |
| 10 | 29.05.17 | ISSUED FOR DA | JO | ML |




Client

DOMAGROUP

Project

Project Name

50 Honeysuckle Drive,
Newcastle NSW 2300

Drawing Name

BASEMENT PLAN

| Date | Scale | Sheet Size |
|---|---|---|
| 29.05.17 | 1 : 250 | @ **A1** |

| Drawn | Chk. |
|---|---|
| JO | ML |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 5485 | DA-0200 | / 10 |

0 5 10 20m
1:250

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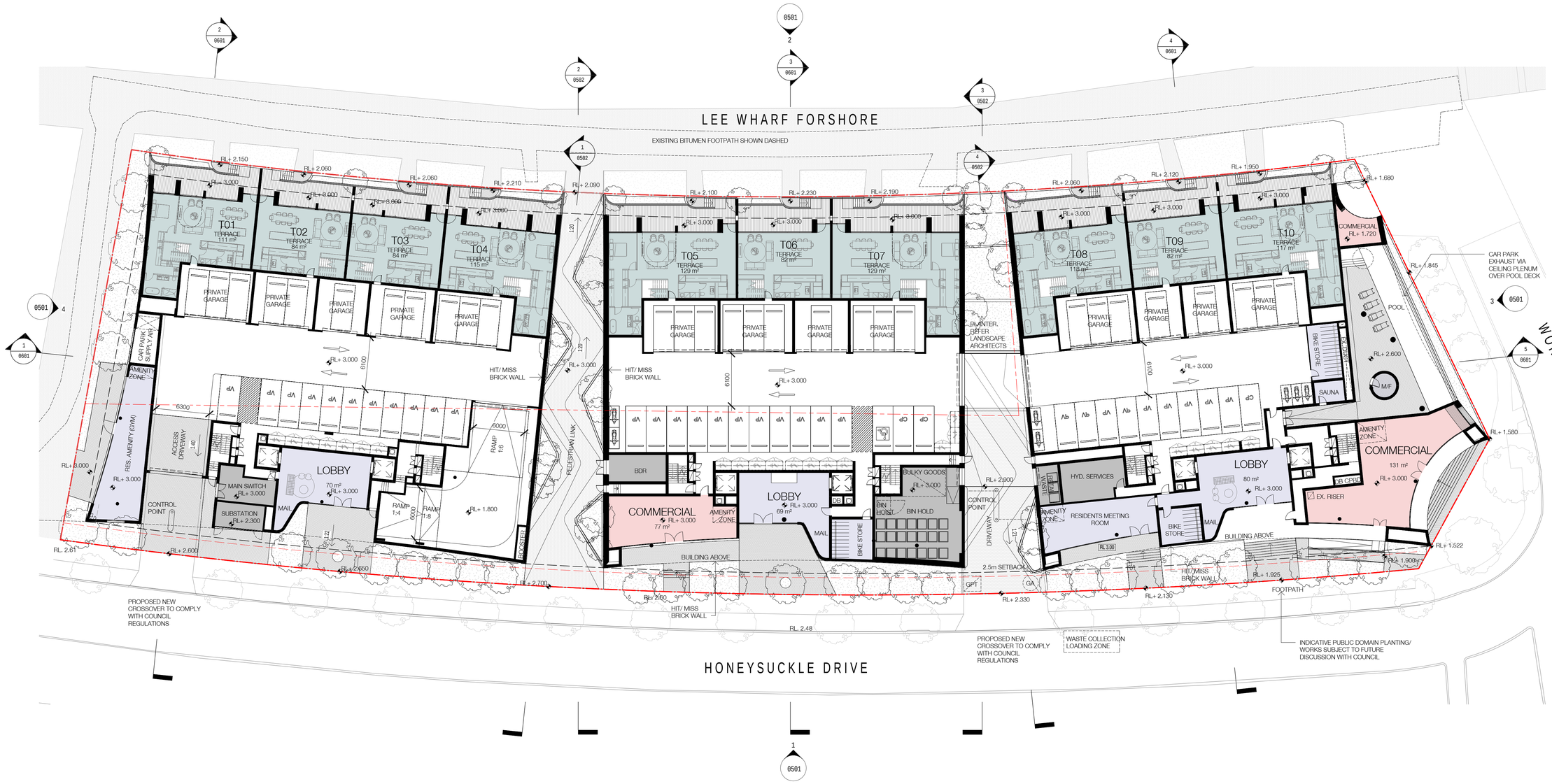


Client

DOMAGROUP

Project

Project Name

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Newcastle NSW 2300

Drawing Name

GROUND FLOOR PLAN

| Date | Scale | Sheet Size |
|---|---|---|
| 29.05.17 | 1 : 250 | @ **A1** |

| Drawn | Chk. |
|---|---|
| JO | ML |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 5485 | DA-0201 | / 10 |

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1:250

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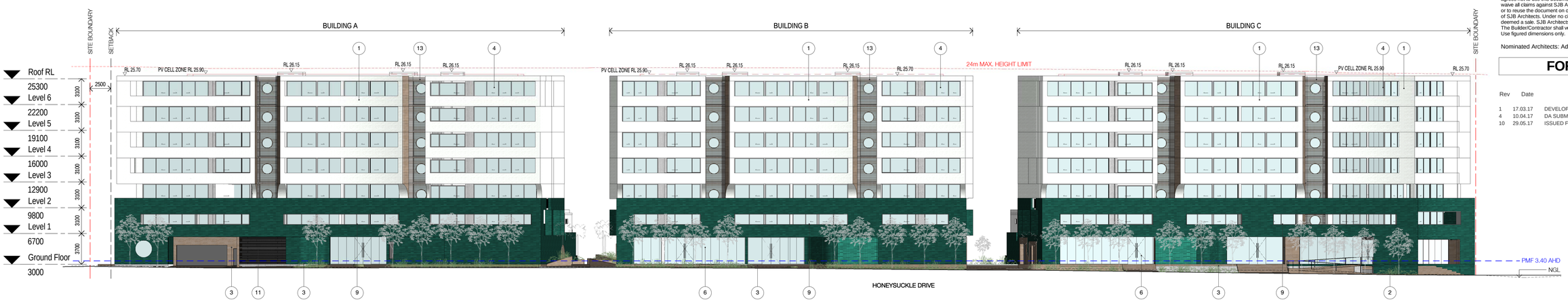
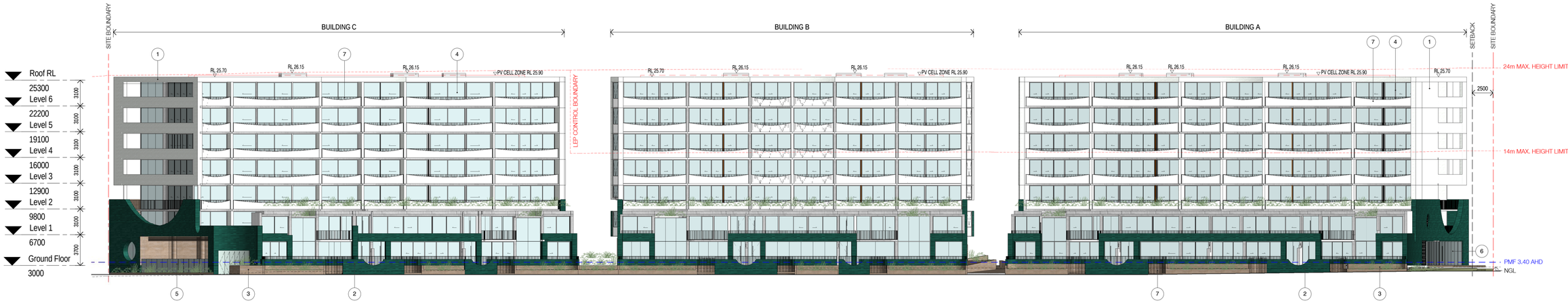
| 10 | 29.05.17 | ISSUED FOR DA | JO | ML |




## 1 SOUTH ELEVATION

0201 1 : 250

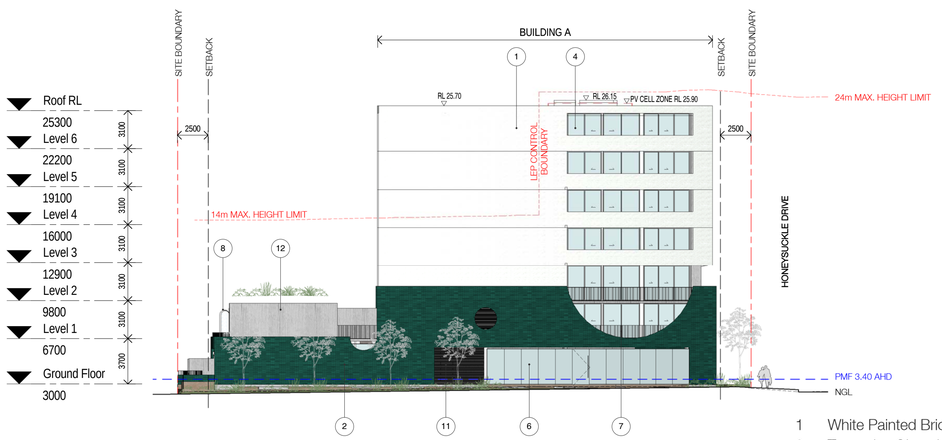



## 2 NORTH ELEVATION

0201 1 : 250

## 3 EAST ELEVATION

0201 1 : 250




## 4 WEST ELEVATION

0201 1 : 250

1 White Painted Brick
2 Turquoise Glazed Brick
3 Terracotta Brick
4 Residential Glazing
5 Swimming Pool Glazed Balustrade
6 Commercial Glazing
7 Metalwork - Gates Railings Balustrades
8 Marble Privacy Screen
9 White Metal Panels
11 Aluminium Louvre Wall
12 Off-form concrete
13 Brick Screen
15 Hit and Miss Terracotta Brick

Client

DOMAGROUP

Project

Honeysuckle

50 Honeysuckle Drive,
Newcastle NSW 2300

Drawing Name

SITE ELEVATIONS

| Date | Scale | Sheet Size |
|---|---|---|
| 29.05.17 | 1 : 250 | @ A1 |

| Drawn | Chk. |
|---|---|
| JO | ML |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 5485 | DA-0501 | / 10 |

0 5 10 20m
1:250

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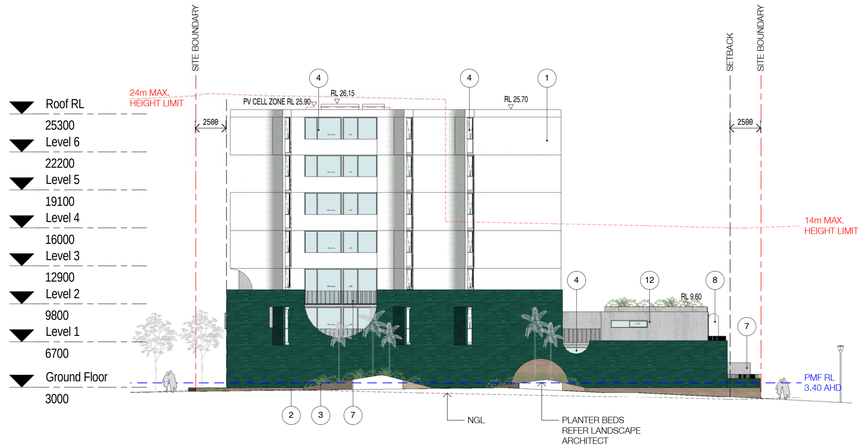


## 1 BUILDING A EAST ELEVATION

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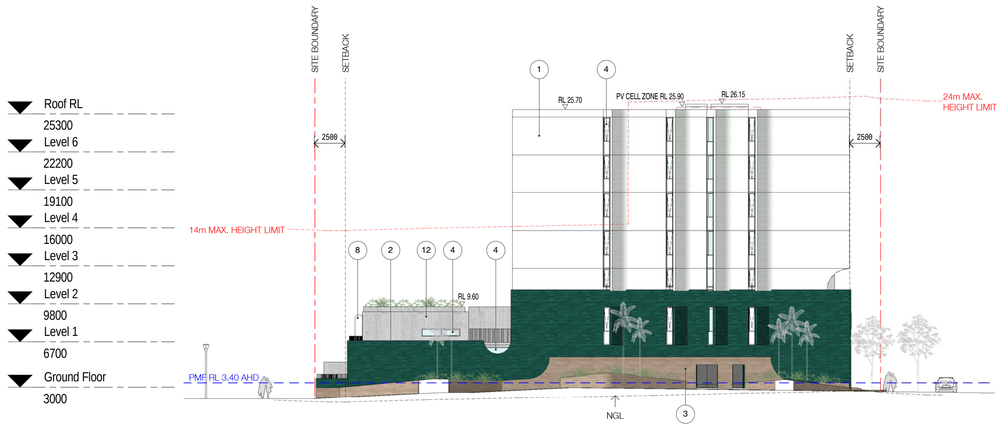


## 2 BUILDING B WEST ELEVATION

0201 1 : 250




## 3 BUILDING B EAST ELEVATION

0201 1 : 250




## 4 BUILDING C WEST ELEVATION

0201 1 : 250

1 White Painted Brick
2 Turquoise Glazed Brick
3 Terracotta Brick
4 Residential Glazing
5 Swimming Pool Glazed Balustrade
6 Commercial Glazing
7 Metalwork - Gates Railings Balustrades
8 Marble Privacy Screen
9 White Metal Panels
11 Aluminium Louvre Wall
12 Off-form concrete
13 Brick Screen
15 Hit and Miss Terracotta Brick

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Nominated Architects: Adam Haddow-7188 | John Pradel-7004

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Client

DOMAGROUP

Project

Honeysuckle

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Drawing Name

INTERNAL ELEVATIONS

| Date | Scale | Sheet Size |
|---|---|---|
| 29.05.17 | 1 : 250 | @ A1 |

| Drawn | Chk. |
|---|---|
| JO | ML |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 5485 | DA-0502 | / 10 |

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1:250

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Nominated Architects: Adam Haddow-7188 | John Pradel-7004

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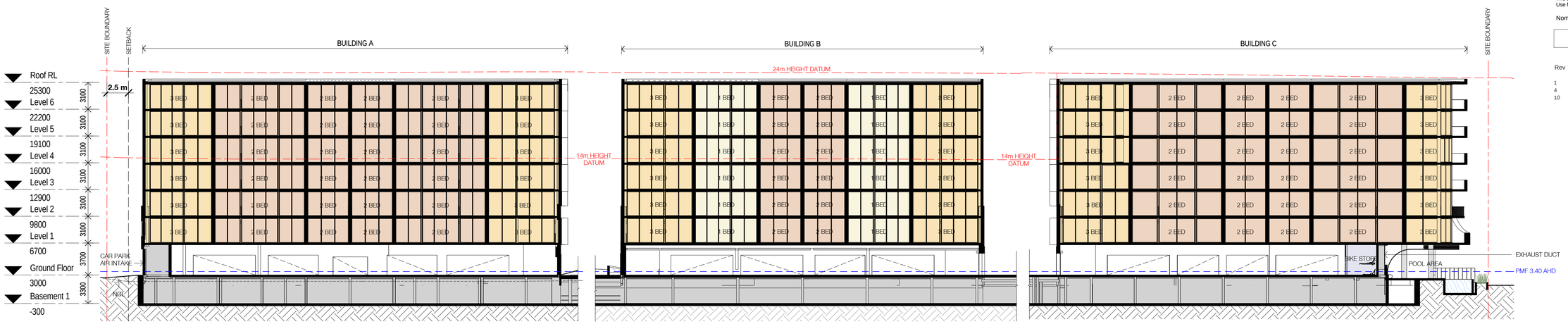


## 1 SITE SECTION

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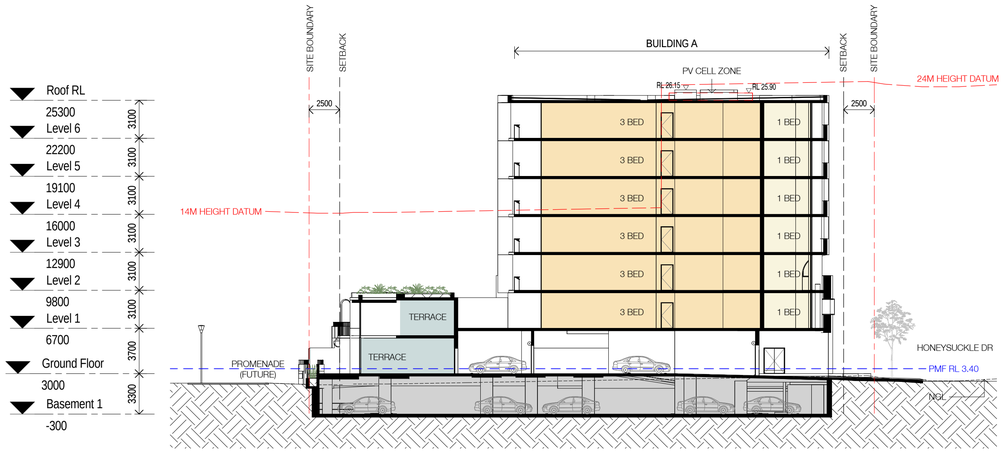


## 2 BUILDING A - TYP. SECTION

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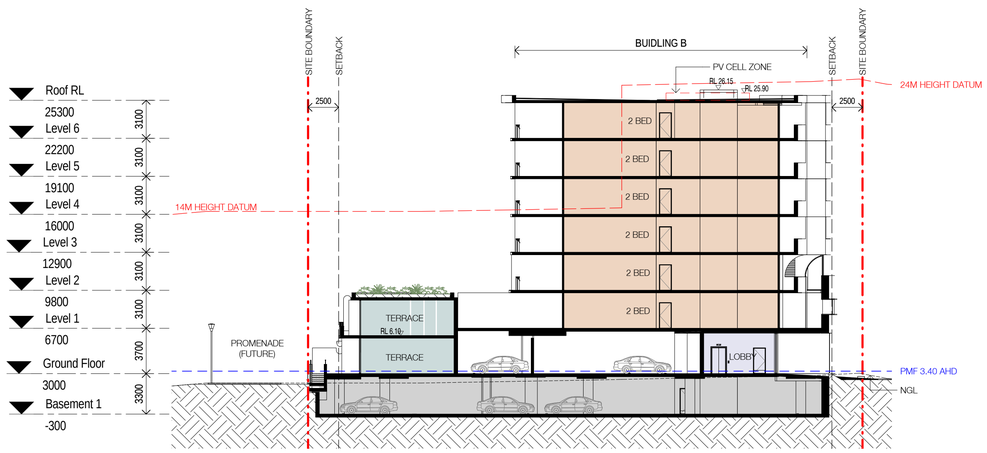


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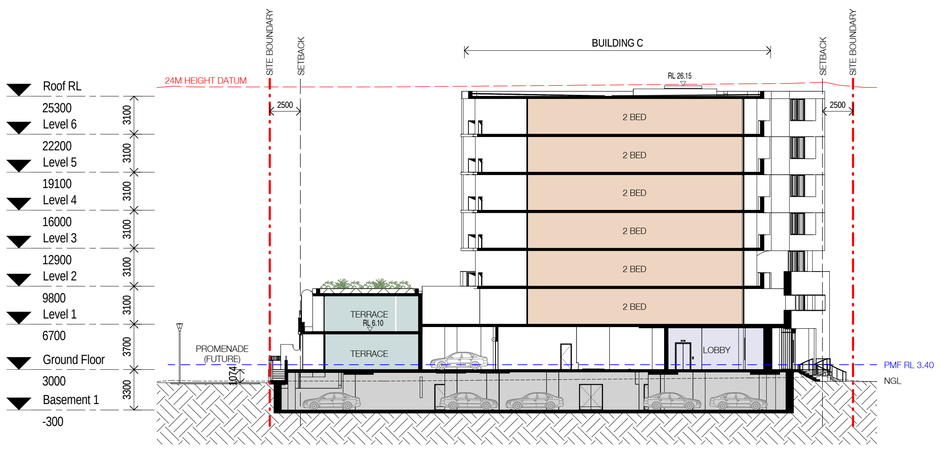


## 4 BUILDING C - TYP. SECTION

0200 1 : 250

Client

DOMAGROUP

Project

Honeysuckle

50 Honeysuckle Drive,
Newcastle NSW 2300

Drawing Name

SITE SECTIONS

| Date | Scale | Sheet Size |
|---|---|---|
| 29.05.17 | 1 : 250 | @ A1 |

| Drawn | Chk. |
|---|---|
| JO | ML |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 5485 | DA-0601 | / 10 |

0 5 10 20m
1:250

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0 5 10 15 20 30 40 50m

1:500 @ A3

## LEGEND

- 300mm diameter Borehole Location
- Cone Penetration Test Location
- W Well Location
- Former Wharf Road Alignment
- 1 Approximate Photo Location and Orientation
- Approximate Site Area

**Douglas Partners**
*Geotechnics / Environment / Groundwater*

| | | | |
|---|---|---|---|
| CLIENT: Doma Holdings (NSW) Pty Ltd | | TITLE: **Test Location Plan** | PROJECT No: 91034.00 |
| OFFICE: Newcastle | DRAWN BY: PLH | **Geotechnical & Environmental Assessment** | DRAWING No: 1 |
| SCALE: 1:500@A3 Sheet | DATE: 13.04.2017 | **50 Honeysuckle Drive, Newcastle** | REVISION: 1 |

0 10 20 30 40 50 75 100m

1:1000 @ A3

## LEGEND

- X HR1 - (used for ASLP-Sea Water Testing)
- X SW1 - Surface Water Sample Downgradient of Site

**Douglas Partners**
Geotechnics / Environment / Groundwater

| | | |
|---|---|---|
| CLIENT: Doma Holdings (NSW) Pty Ltd | | |
| OFFICE: Newcastle | DRAWN BY: PLH | |
| SCALE: 1:100@A3 Sheet | DATE: 13.04.2017 | |

TITLE: **Surface Water Sample Location Plan**
**Geotechnical & Environmental Assessment**
**50 Honeysuckle Drive, Newcastle**

N

| | |
|---|---|
| PROJECT No: | 91034.00 |
| DRAWING No: | 2 |
| REVISION: | 1 |