Phase 2 Environmental Site Assessment

Fifteenth Avenue Business Hub, West Hoxton NSW

Prepared for Western Sydney Parkland Trust
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Executive Summary

Western Sydney Parkland Trust (WSPT) commissioned Zoic Environmental Pty Ltd (Zoic) to complete a Phase 2 Environmental Site Assessment (Phase 2 ESA) for 195 Fifteenth Avenue, West Hoxton ('the site'). The objective of the Phase 2 ESA was to meet the requirements of Director General's Requirements (DGR) Item 3 "Contamination" for State Significant Development application (Application No. SDD 14_6407) to determine whether the site is or can be made suitable for the proposed Fifteenth Avenue Business Hub (FABH).

195 Fifteenth Avenue covers approximately 7.7 hectares and makes up approximately 85% of the proposed 8.9 hectare FABH; the remaining 15% of which is the adjoining 185 Fifteenth Avenue, which has previously had Phase 2 ESA completed (Douglas, July 2015).

It is understood that the development of FABH will include a supermarket, retail outlets, large format retail, fast food outlet, service station, central carpark and childcare facility in addition to internal roads and landscaped areas.

The 7.7 hectare (approx.) site was cleared prior to the mid 1950s and has been used predominantly for market gardening purposes.

At the time of the Phase 2 ESA inspection and fieldworks, the majority of the site was covered in grass with isolated crops of trees and numerous large blackberry bushes.

Key structures and features that were identified during the fieldworks included:

- Residential house and four sheds in the southeastern portion (Lot 195);
- Large dam in the southwestern portion of the site (Lot 347);
- Stockpiles of horse manure (boundary of Lots 305 and Lot 306) that were bagged and stored in the sheds in the southeastern portion of the site; and
- Unofficial carpark in the southwestern corner of the site (Lot 347).

The scope of work for the Phase 2 ESA was conducted in accordance with relevant NSW EPA and NEPM (2013) guidelines. Works included:

- Review of an existing Phase 1 Environmental Site Assessment (Phase 1 ESA) prepared by Golder (May 2015); published soil and geology maps; online searches for registered groundwater monitoring wells; and, NSW EPA contaminated sites.
- Fieldworks included a walkover site inspection and intrusive sampling at 50 locations which were chosen based on a combination of targeted sampling in identified potential areas of environmental concern and to provide general site coverage across the site.
- Collection of groundwater from four groundwater wells previously installed hydraulically up-gradient on the adjoining property (185 Fifteenth Avenue, former bus depot) by Douglas (July 2015).
- Soil and groundwater samples were analysed by a NATA accredited laboratory for the identified contaminants of concern that may be associated with past agricultural use including selected heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc); organochlorine pesticides (OCPs) and asbestos. Selected samples were targeted for analysis of hydrocarbons (TRH; BTEX, phenols and PAH), nitrogen, phosphorous and coliforms.
- Laboratory results were compared against the most sensitive NEPM (2013) criteria for residential with garden/accessible soils (which includes childcare centres).

Based on the field observations and evaluation of analytical soil results, no areas of gross contamination were identified and the site is considered generally suitable for the proposed development (including child care centre) with the exception of the following:

- Asbestos (ACM, FA/AF) were identified in TP2 near one of the sheds in the south-eastern portion of the site. Based on the previous Golder (2015) Phase 1 ESA, this portion of the site was previously found to contain two confirmed ACM fragments.
- Localised dumped household waste and rubbish identified along the northern boundary with Flynn Avenue and to a lesser extent along the north-western boundary with Twenty-Seventh Avenue are aesthetically unsuitable.

Notwithstanding the general site suitability for the proposed development, the following are required to be addressed:

- A hazardous materials survey should be completed on the residential house and sheds in accordance with the requirements of Australian Standard AS 2601. Asbestos should be removed in accordance with Code of Practice: How to Safely Remove Asbestos (SWA 2011) and relevant WorkCover NSW guidance. A clearance certificate must be issued by a competent person prior to commencement of demolition works.
- The south-eastern portion of the site around the residential house and sheds requires near surface asbestos remediation and validation. A Remedial Action Plan (RAP) should be prepared by a suitably qualified environmental consultant to ensure that these works are completed in accordance with relevant guidelines and regulations including NEPM (2013), WA DoH (2009) Guidelines for the Assessment, Remediation and Management of Asbestos Contamination in Western Australia, SWA (2011), WHS Regulations (2011) and WorkCover NSW guidance.
- A protocol is to be prepared and implemented during civil and construction works for managing unexpected finds of contamination or sources asbestos fragments.
- Following demolition of site structures, confirmatory samples should be collected from within former building footprints to ensure that the underlying soils are suitable for the proposed land uses.
- In the event that onsite dams are to be drained, further analysis may be required to ensure that waters are disposed of in accordance with the requirements of the Protection of Environment Operations Act 1997.
- Localised dumped debris and household waste were identified along the northern and north-western fenced boundaries should be removed and disposed appropriately to a licensed landfill.

Table of Contents

Appendices

1. Introduction

This Phase 2 Environmental Site Assessment (Phase 2 ESA) was commissioned by Western Sydney Parklands Trust (WSPT) for the proposed State Significant Development (SSD) commercial estate known as Fifteenth Avenue Business Hub (FABH) located in West Hoxton, NSW.

The indicative layout plan for the FABH (which includes the current 7.7 hectare site and the adjoining 1.2 hectare former bus depot at 185 Fifteenth Avenue) includes:

- Supermarket
- Retail square with retail outlets
- Large format Retail
- Fast-food outlet
- Service station
- Childcare facility with outdoor play area
- Warehouses, industrial sheds
- Retail bulky goods handling
- Service Centre
- Above ground central car parking
- Stormwater detention basin.
- Internal roads and services
- Landscaped setbacks that are proposed for future development and future road widening

Department of Planning & Environment (DPE) require the Phase 2 ESA to facilitate the planning application for SSD 6407.

1.1 Objective and Scope of Works

The primary objective of the Phase 2 ESA was to assess the environmental suitability of the site for the proposed commercial / business development against the requirements outlined NEPM (2013) and NSW OEH (2011) reporting guidelines, as well as to:

- Meet the requirement of DGRs Item 13 'Contamination' for SST 6407;
- Sample locations identified as areas of potential concern, based on review of previous environmental investigations; and
- Obtain sufficient information to facilitate the planning application for the proposed development.

Consistent with the requirements outlined in NSW OEH (2011) reporting guidelines, the Scope of Works for the Phase 2 ESA included:

- **Desktop review**: including a previous report prepared for the site (Golders, May 2015); Review of online sources of information including NRAtlas search for registered groundwater wells within a 250m radius of the site; and, a review of NSW EPA Database for listed contaminated sites in the vicinity of the property.

- **Fieldwork**: The intrusive work comprised a combination of test pitting and hand auguring at 50 locations across the site, with samples collected from fill and natural soils.
- **Laboratory analysis**: Soil samples were analysed by NATA accredited laboratories for contaminants of concern, which, based on the rural historic use of the site, included organochlorine pesticides (OCPs) and metals (M8); asbestos; and, to a lesser extent petroleum hydrocarbons around sheds (TPH, BTEX, PAH; phenols) and selected nutrients (nitrogen, phosphorous).
- **Reporting**: Preparation of the Phase 2 ESA report in accordance with the NSW EPA (2011) Guidelines for Consultants Reporting on Contaminated Sites. Results were assessed against the most sensitive NEPM (2013) criteria for residential with garden/accessible soils (which includes childcare centres).

2. Site Identification and Description

The site is shown on Figure 1, Appendix A. The project site identification and land use details are provided in Table 2.1:

Table 2.1: Site Identification

Title	Details
Street Address:	195 Fifteenth Avenue, West Hoxton NSW
Current Description:	Lot 2 DP 307334 Lot 304 DP2475 Lot 305 DP2475 Lot 306 DP 2475 Lot 346 DP2475
Proposed Description:	The concept layout for the entire FABH (including the adjoining 185 Fifteenth Avenue) will result in subdivision of the site to create seven leasehold lots and internal roads/landscaping as follows: Lot 1: Fast Food. Lot 2: Large Format Retail. Lot 3: Service Station. Lot 4: Retail/Business. Supermarket. Lot 5: Child care centre. Lot 6: Future development site. Lot 7: Stormwater detention. It is noted that the concept plan is limited to the southern portion of the site (along Fifteenth Avenue) with no current details available for the northern portion of the site (along Flynn Avenue) Refer to illustrative site plan drawing and lot layout plan provided in Appendix A (taken from LFA (October 2015) Urban Design Report).
Site Ownership:	Western Sydney Parklands Trust
Area:	• 195 Fifteenth Avenue (the site): 7.7 hectares (approx.). • 185 Fifteenth Avenue (adjoining former bus depot): 1.2 ha (approx.) • Total FABH: 8.9ha (approx.).

Title	Details
Local Government Area:	Liverpool City Council
Zoning:	According to Council 149 Certificates obtained by Golders as part of the Phase 1 ESA (May 2015), there is no information on zoning for the site. Review of Liverpool Council LEP (2008) zoning maps indicate that the site is zoned "*WSP SEPP Western Sydney Parklands*".
Surrounding landuse:	**North**: Flynn Avenue and then rural use including poultry sheds. **East**: former bus depot (185 Fifteenth Avenue) which forms part of the proposed FABH. **South**: Fifteenth Avenue and commercial use (including butcher; delicatessen; liquor store; service station; and, post office). **West**: Twenty-seventh Avenue beyond which is they Sydney Water Supply Channel and associated landscaped corridor. There is also a small war memorial to the southwest of the site (Kirkpatrick and Boyland Park).

3. Site Condition and Surrounding Environment

3.1 Walkover Site Inspection

A site inspection and walkover was conducted by Silja Kuerzinger, Zoic Environmental Principal Scientist, on 28 April 2016.

The following observations were made:

- The site was predominantly undeveloped, cleared grazing land covered by grass, shrubs and small stands of trees. A large blackberry outcrop was located in the southwestern portion of the site.
- A residential house and three associated sheds were located in the southeastern portion of the site (Lot 346). The tenants operate horse manure packaging whereby stockpiles of manure are delivered to the mid-northern portion of the site (Lot 306) and then bagged in the sheds prior sale.
- The sheds appeared to be constructed of corrugated iron with concrete hardstand floors; the roof of the residential house (and potentially the wall cladding) was suspected to be made of asbestos containing materials (ACM). Several palm trees were observed in the vicinity of the residential house.
- A large dam was located in the southwestern lot (Lot 2) which covers an area of approximately 2500m^2. Water in the large dam was clear with no sign of algal growth or hydrocarbon staining. A small dam was located along the mid-western boundary of the site.; no algal growth, staining or other indicators of contamination were observed in the waters of the small dam
- An unpaved carpark covering approximately 2000m^2 was located to the south of the large dam adjoining Fifteenth Avenue.
- An earthen drainage ditch has been constructed between the large dam and the public carpark in the southwestern portion of the site.
- A herd of steers were located in the western portion of the site, with access to the large dam for drinking water.
- The central, northern and eastern areas of the site had reworked uneven surface soils indicative of past market gardening activities.
- There was no signs of chemical storage. Along the northern boundary (Flynn Avenue) there was significant amounts of surficial dumped rubbish – including metal; mattresses; wood; white goods; and, household bags of rubbish
- The topography across the project site generally falls from east to west and towards the southwest. The elevations across the site range from approximately 100m AHD to 85m AHD.

3.2 Site Condition

The site condition is summarised in Table 3.2 from site observations made.

Table 3.2: Site Condition

Item	Details
Topography and Drainage:	The topography of the project site is uneven with an overall slope to the south and west. The measured RLs across the site ranged from 100m AHD to 85m AHD (southwestern area). The majority of surface runoff from the site would drain towards the large dam in the southwestern portion of the project site. Localised surface water would flow to the smaller dam in the mid-western portion of the site.
Boundary Condition:	The site is fenced and locked to prevent public access, which was observed to be in generally good condition. Significant amounts of household and general rubbish were noted along the northern fence line adjoining Flynn Avenue (both on the wide road verge and within the site).
Visible Signs of Contamination:	No evidence of chemical or oil staining were observed onsite. Surficial bags of household rubbish, metal, wood, toys, mattresses, fast food packaging etc were identified along the northern fence line (Flynn Avenue) and to a lesser extent along the western boundary (Twenty Seventh Avenue).
Vegetation:	Vegetation in and around the site was observed to be good condition.
Presence of Drums and chemical storage:	No drum and/or chemical storage was observed.
Odours:	No odours were observed during the fieldworks and all soil readings with a PID during fieldworks were <10ppm. A manure odour was noted in the vicinity of the stockpiled manure and around the packaging sheds.
Condition of Buildings & Roads:	Buildings were observed to be in good condition. The three storage sheds were constructed of corrugated iron and concrete floors. The residential house was in good condition – it was noted that the roof (and possibly the walls) were constructed of potential ACM.

Item	Details
	There are no formal roads within the site- however there are dirt tracks to allow for vehicle movement.
Quality of Surface Water:	Water in the two dams was observed to be clear with no odour or sign of nutrient loading or contamination. A water sample was collected for analysis from each dam.
Flood Potential:	Liverpool Council Section 149 certificate for Lot 346 indicates that the land is not subject to flood related development controls.
Relevant Local Sensitive Environments:	The relevant sensitive human receptors associated with the site are: • Future occupants (including child care). • Construction and maintenance workers. • Adjacent site users (commercial and residential). The closest ecological receptor is the vegetation across the site and the Sydney Water Supply Channel located approximately 20m west of the site.

4. Site History

4.1 Site History and Surrounds

The site history is summarised in this section. This information has been sourced from the following:

- Golder Associates (May 2015) Preliminary Environmental Site Assessment for Commercial Precinct, 195 Fifteenth Avenue, West Hoxton.
- NSW EPA's Public Register searches.

Table 4.1: Summary of Site History

Item	Details
Past Ownership:	The Golder (May 2015) Phase 1 ESA included a review of Certificates of Title. A summary of the key title ownership details of the project site indicated that: • Between 1895 and 1964: Several private ownerships. • Between 1964 and 1974: Ownership by companies (Bendoc Developments Pty Ltd; Austrocom Pty Ltd; and Guletta Pty Ltd). • 1974 to present: Owned by NSW Government (State Planning Authority of NSW; Minister Administering the Environmental Planning & Assessment Act 1979; Western Sydney Parklands Trust). • Western Sydney Parklands Trust has owned the lots since 2008.
NSW EPA Records	Zoic conducted a search of the NSW EPA Public Records, which revealed: • The site is not listed on the EPA's register of contaminated sites. • According to the EPA's Protection of the Environment Operations (POEO) public register, there were no prevention, clean-up or prohibition notices for the project site. • There are no active PoEO environment protection licenses for the project site.
WorkCover Dangerous Goods Licenses:	Golder requested a search of WorkCover NSW Stored Chemical Information Database (SCID) – which indicated that there were no records for licenced dangerous goods for the project site.
Council Record	Golder obtained planning certificates issued under Section 149 of the Environmental Planning & Assessment Act 1979 for one representative lot (Lot 346). No information pertaining to Section 59 (2) of the Contaminated Land Management Act 1997 is applicable to the land (the land ***is not*** significantly contaminated; the land has ***not*** been the subject of a management order or ongoing maintenance order; the land has not been the subject of a site audit statement).

Item	Details
Summary of Aerial Photographs:	As part of the Phase 1 ESA, Golder reviewed aerial photographs from the following years: 1955; 1961; 1970; 1978; 1994; 2002; and, 2012 (sixmaps). • 1955 and 1961: The site was cleared land, possibly used for grazing. A small dam was present along the mid-western boundary. • 1970: Structure present in the southeastern portion of the site (location of existing residential house). An apparent depression in the southwestern portion of the site in the area of the existing large dam. Evidence of market gardening. • 1978: A shed had been constructed to the north of the residential property in the southeastern portion of the site. • 1994: Southeastern portion had several additional sheds/structures and there was evidence of storage of materials (wood; building materials) in this portion of the project site. Ongoing market gardening activities in across central and eastern portions of the site. Stockpiled material in the central portion of the site in the location of the stockpiled manure observed during the walkover site inspection. • 2002 and 2012: The large dam was visible in its current configuration. • 2012: No significant changes noted. The following was noted about the surrounding landuse: • 1955: Fifteenth Avenue and Twenty Seventh Avenue were visible (likely to be unsealed). The adjoining property to the east (former bus depot) had a residential house and shed. Greater area was used for agricultural use, with poultry sheds, grazing and market gardening activities visible. • 1961: Small scale bus depot activities appears to the east of the project site. • 1970: Flynn Avenue visible to the north of the site. Suspected service station visible on the southern side of Fifteenth Avenue. Increased number of buses to the east of the site. • 1978 to 2012: No significant changes; more commercial properties identified on the southern side of Fifteenth Avenue.
Inventory of Chemicals and Wastes and their Location:	At the time of the Zoic Phase 2 ESA, there were no chemicals at the site with the exception of small amount of maintenance chemicals in the sheds. No staining or odours were noted on the concrete hardstands of the sheds. Localised household waste/rubbish was noted on mainly along the northern site boundary with Flynn Avenue (and to a lesser extent along parts of the western site boundary with Twenty Seventh Avenue). This included Black garbage bags of suspected household rubbish; scrap metal; mattresses; toys; fast food packaging and articles of clothing.

Item	Details
Description of Manufacturing / Industrial Processes	Limited to delivery of manure stockpiles to the central portion of the site and subsequent internal movement to the sheds to allow for packaging.
Product Spill and Loss History:	No information available; given the rural / farming use of the site, it is considered that any spill / product loss would have been limited to small qualities of fertilizers / herbicides.
Complaint History:	Not applicable
Summary of Previous Land Use & Chronological List:	The historical use of the site has been predominantly rural / agriculture throughout the reviewed timeframe consisting of grazing; market gardening and manure packaging.

4.2 Previous Environmental Investigations

Zoic was provided with the Golder (May 2015) Phase 1 Environmental Site Assessment which was prepared in conjunction with a geotechnical investigation for Western Sydney Parklands Trust.

The Phase 1 ESA included:

- Numerous desktop searches (aerial photographs, selection of historic title searches; Council 149 Certificate; NSW WorkCover Dangerous Goods search; published geology and soil maps; contaminated land records and public registers held by NSW EPA).
- Site walkover noting environmental conditions, and features.
- Interview with long-term tenant (since 1970).
- Limited sediment sampling and water sampling from the two dams only (three sediment samples; two surface water samples from the dams).
- As part of associated geotechnical investigation, selected soil samples were analysed (results provided in Appendix B).
- Analysis for TRH, BTEX, PAH, metals, OPP, OCP and asbestos.
- Soil and sediment results compared to NEPM (2013) HSL D and EIL/ESL; Dam water sample compared to ANZECC (2000).
- All soil, sediment and surface water results below relevant adopted site criteria, however, Golder reported two fragments of confirmed ACM across the surface of the builders yard (Lot 346).
- Based on the findings of the Phase 1 ESA, Golder made the following recommendations:
  - Soil/groundwater assessment of the land packages would be required to confirm the suitability of the site for the proposed development.
  - Asbestos cement debris to be managed prior to commencement of earthworks in accordance with guidance proposed in WorkCover.

In addition to the above Phase 1 ESA for the current site, Zoic was provided Douglas Partners (July 2015) Phase 2 ESA for the adjoining 185 Fifteenth Avenue, West Hoxton, which together with the current project site forms the proposed FABH. The scope of works included soil sampling and installation of six groundwater monitoring wells.

While the findings of the adjoining Phase 2 ESA by Douglas Partners are not directly relevant to the current project site, it is noted that groundwater from 185 Fifteenth Avenue is hydraulically up gradient of the project site and therefore the salient aspects have been summarised below:

- Six groundwater wells were installed ranging in depth from 10.5m to 15m bgl
- The location of MW2 was targeted to the location of former USTs along the mid-southern boundary of 185 Fifteenth Avenue.
- The six groundwater samples were analysed for metals, BTEX, TRH, PAH, OCP, PCB, and phenols.
- No phase separated hydrocarbon (PSH) were observed, however a 'slight hydrocarbon odour' was identified in MW2.
- Groundwater results from MW2 were 'marginally elevated' (TRH and BTEX) which Douglas Partners associated with the former USTs.
- Douglas Partners made a range of recommendations for 185 Fifteenth Avenue that were to be addressed as part of the proposed FABH development.

5. Geology, Hydrology and Hydrogeology

The geology, hydrogeology and hydrology is summarised in this section and has been sourced from:

- Site inspection and investigation works at the site by Zoic.
- Geological maps, soil maps and NSW Natural Resource Atlas.
- Golder (May 2015) Phase 1 ESA.

Table 5.1: Summary of Regional Geology, Hydrogeology and Hydrology

Title	Details
Geology and Soil Map Conditions:	*Geology*: The Geological Map of Penrith (1:100,000) indicates that the site is underlain by the Bringelly shale of the Wainamatta Group. *Soil*: The 1:100,000 Soil Landscape Series Sheet 9030 for Penrith indicates that the soil at the site consists of Luddenham soils, typically associated with the undulating rises of Wainamatta shale.
Acid Sulfate Soils:	The NSW Natural Resources Atlas indicated that the site is not located in an area known for the occurrence of acid sulphate soils (ASS).
Location of Fill Materials:	• Minimal fill was identified during the intrusive works at the site. • The majority of fill material was identified in test pits around the residential house and associated structures (Lot 346) and contained inclusions of blue metal, and isolated occurrences of tiles, brick, ash,, glass and/or plastic to maximum thickness of 0.9m (TP02). • The majority of the site had reworked natural topsoil associated with historic market gardening activities. • Localised dumped surficial rubbish was identified on the northern site boundary with Flynn Avenue and to a lesser extent along the north-western boundary with Twenty-Seventh Avenue.
Summary of Registered Bores:	Golders carried out a search of Department of Primary Industries Office of Water for registered well in the vicinity of the site. The search indicated that there were no registered wells within a 500m radius of the site. It is noted that Douglas Partners installed six groundwater monitoring wells on the hydraulically up gradient adjacent property at 185 Fifteenth Avenue.

Title	Details
	Based on a review of the borehole logs: • Wells were installed to depths of between 10m and 15m bgl. • Groundwater ingress was observed in two groundwater wells (MW2 and MW23) at depths of 12m and 13m bgl respectively. • Standing water levels recorded during groundwater sampling ranged from 6.3m to 10m bgl.
Direction and Rate of Groundwater Flow:	Douglas Partners inferred that groundwater flow was west/south-west across 185 Fifteenth Avenue. This was confirmed by Zoic as part of re-sampling the groundwater wells at 185 Fifteenth Avenue.
Nearest Water Body:	The Sydney Water Supply Channel is located on the western side of Twenty-Seventh Avenue (approximately 20m from the site).
Direction of Surface Run Off:	Surface water is expected to follow the topography and internal drainage lines of the site. The majority of runoff would enter the large dam located in the southwestern portion of the site.

6. Evaluation of Conceptual Site Model

6.1 Potential Sources of Contamination

Based on the desktop review and walkover site inspection, areas of potential environmental concern (AEC) and associated chemicals of concern are summarised as follows:

- **Pest and weed control**: organochlorine pesticides (OCP) and heavy metals are considered the main potential chemicals of concern at the site. ; The potential for organophosphate pesticides (OPP) contamination is considered low, as these breakdown within 12 months of application.
- **Areas around sheds and uncontrolled fill**: Total petroleum hydrocarbons (TPH); monocyclic aromatic hydrocarbons (BTEX); polycyclic aromatic hydrocarbons (PAHs); TPH; OCP; M8; and, asbestos.
- **Carpark area**: metals, TRH, PAH and BTEX.
- **Dumped surface waste**: M8; TPH; BTEX; PAH; OCP; and, asbestos.
- **Hazardous building materials**: M8 and asbestos (associated with current buildings).
- **Dam waters**; metals, OCPs, nitrogen, phosphorous.
- **Adjoining former bus depot**: groundwater migration onto the site of TRH, BTEX, VOC.

6.2 Potential Migration Pathways

The potential for contaminants to migrate off site is a combination of:

- The nature of the contaminants (i.e. solid / liquid and mobility characteristics);
- The extent of the contaminants (i.e. isolated or widespread);
- The location of the contaminants (i.e. on the site surface or at depth); and
- The topography, geology, hydrology and hydrogeology at the site.

Based on the information available to date, the following migration pathways may be associated with the site:

- If shallow fill has been impacted, given the clayey nature of underlying soils, there is low potential for vertical migration of contamination through the soil strata.
- Given the anticipated depth of groundwater (>10m) and the heavy clay and shale bedrock, and the analytical groundwater results from the adjoining 185 Fifteenth Avenue, it is considered unlikely that groundwater contamination is migrating onto the current site.
- As the majority of the site is covered in grass/vegetation, the potential for contamination to migrate from surface run off or windblown dust is minimal (the exception being from the stockpiles of manure in the central portion of the site).

6.3 Potential Receptors

Potential receptors to COPC that may be present include the following:

- Future construction and maintenance workers on the site;
- Future occupants at the site (including proposed childcare centre);
- Offsite residential and commercial /industrial land use; and
- Terrestrial flora and fauna at the site.

7. Sampling Analysis and Quality Plan

7.1 Data Quality Objectives

The data quality objectives (DQO) process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection designs. The DQO defines the experimental process required to test a hypothesis. By using the DQO process to plan the investigation effort, the relevant parties can improve the effectiveness, efficiency and defensibility of a decision in a resource and cost effective manner.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The seven-step DQO process adopted for the works was as follows:

- Step 1 – Defining the Problem. The first step in the DQO process is to 'define the problem' that has initiated the investigation;
- Step 2 – Identify the Decision. The second step in the process is to define the decision statement that the study will attempt to resolve;
- Step 3 – Identify Inputs to the Decision. In this step, the different types of information needed to resolve the decision statement are identified;
- Step 4 – Define the Study Boundaries;
- Step 5 – Develop a Decision Rule;
- Step 6 – Specify Limits on Decision Errors; and
- Step 7 – Optimise the Design for obtaining the Data.

These Steps have been followed for the site, with results presented in Appendix D.

7.2 Sampling and Analysis Plan

The rationale behind the sampling and analysis plan is presented in the sections below.

Sampling Pattern

The selection of sampling locations across the site were based on a combination of targeted locations and stratified grid sampling to provide good general lateral site coverage. Figure 2 shows the investigation locations on site. This includes:

- Targeted sampling around existing residential house and sheds; carpark area; along fence boundaries and, manure stockpiles.
- Combination of grid-based and random stratified sampling across the remainder of the project site to provide general site coverage.

Zoic considered that groundwater sampling at the site was not required as the depth of groundwater is >10m bgl and the desktop investigation did not identify potential onsite sources for groundwater contamination.

Nonetheless given that the adjoining former bus depot is hydraulically up-gradient, and therefore indicative of groundwater quality migrating onto the site, it was considered beneficial to re-sample existing groundwater wells at 185 Fifteenth Avenue (noting that this is the most likely potential source of groundwater contamination associated with the current project site).

Sampling Density

Zoic note the sampling density of 50 locations across the 7.7 hectare site does not meet the recommended minimum number in the NSW EPA (1995) Sampling Design Guidelines. However, given the predominantly rural use of the site; combined with the targeted sampling of the identified AECs and the lack of contamination identified during the walkover site inspection, Zoic is confident that the sampling regime provides adequate characterisation of subsurface soil conditions.

Intrusive works were to a maximum of 1.4 m bgl with samples collected near-surface at all locations and underlying natural samples collected from most locations for the purposes of vertical delineation (if required).

Sampling Methodology

Following clearance by a service locator, intrusive sampling was carried out as a combination of hand auguring (HA1 to HA7) and test pitting with an excavator (TP01 to TP43).

- Ground conditions were logged with detail on any changes in stratigraphy, discolouration, staining, odours, moisture or other indicators of contamination noted.
- Soil samples were taken with clean disposable nitrile gloves from the middle of the hand auger or the middle of the excavator bucket and placed in laboratory supplied sample containers with Teflon lid. Samples for asbestos analysis were placed in 500mL snap-lock bags.
- Soil sample containers were checked to ensure that they were free of headspace and then placed in an iced Esky to cool samples to below 4^{o}C.
- Containers were labelled with the sample number, project number and date. This information was recorded on the COC form; and
- Samples were transported to the laboratory, Envirolab Services in Sydney, within 48 hours of collection to allow technical holding times for analysis to be achieved and to minimise any interference with the samples.

PID Screening

Selected soil samples were screened for volatile compounds using a calibrated PID provided by Airmet Scientific (calibration certificate provided in Appendix E). Elevated PID readings, visual and olfactory indicators were used to aid the determination of sampling depth and scheduling samples for chemical analysis.

The following is a summary of the PID screening procedure:

- Placement of a soil sample into a re-sealable plastic bag until half filled, then sealed;
- Measurement of background VOC concentrations in ambient air prior to each reading to account for sensor drift; and
- Using the point of the PID, punch a small hole in the bag. Place the tip of the PID in the bag and monitor the readout and note the maximum concentration during the recording period.
- No elevated PID readings were recorded for any samples (maximum 7ppm).

Surface and Groundwater Sampling and Screening

Surface water samples from the two onsite dams were collected with a bucket; samples were collected in laboratory provided preserved and unpreserved amber bottles.

Groundwater samples from the adjoining 185 Fifteenth Avenue were collected with dedicated disposal bailers. Wells were purged to the equivalent of three well volumes prior to sampling (it is noted that a calibrated groundwater quality meter was used onsite, however, readings were anomalous (particularly for DO% and ECuS/cm) and were therefore not relied upon.

Laboratory prepared water trip spike and trip blanks were taken into the field and analysed by Envirolab.

Field QA/QC Sampling

The methodology for obtaining QA/QC samples was conducted as follows:

Duplicate Samples

In accordance with NEPM (2013), two soil duplicates were collected in the field. They were collected from the same sampling point and divided into two separate and unrelated sample containers for analysis at the same laboratory (intra-laboratory precision).

- Soil: Dup1 = TP06 (0.6-0.7).
- Soil: Dup2(a) = TP24 (0.7-0.8).
- Groundwater: Dup1(water) = MW24.

Triplicate Split Samples

In accordance with NEPM (2013), two soil triplicate were collected in the field for analysis at a secondary laboratory (ALS) to test for intra-laboratory precision.

- Soil: Dup2(b) = TP06 (0.6-0.7).
- Soil: Dup3 = HA7 (0.2-0.3).

Trip Spikes and Trip Blank

One soil and one water trip spike and one soil and water trip blank provided by Envirolab accompanied the samples during fieldworks and transit which were analysed for volatile contaminates (BTEX; TRH F1).

Rinsate Blanks

No rinsate blanks were obtained as samples were collected from central portion of the hand auger or the central portion of the excavator bucket and therefore cross contamination from sampling equipment was not considered an issue. Additionally new nitrile gloves were used to collect each soil sample.

No groundwater rinsate blanks were collected, as dedicated disposable bailers were used for each well.

8. Evaluation of QA/QC

The QA/QC results for the soil duplicates (intra-laboratory) and triplicates (inter-laboratory) are summarised in Table 5 (soil) and Table 8 (groundwater) Appendix B.

- Intra- laboratory
  - Dup1 = TP06 (0.6-0.7).
  - Dup2(a) = TP24 (0.7-0.8).
  - Dup1 (water) = MW24 (groundwater).
- Inter-laboratory:
  - Dup2(b) = TP06 (0.6-0.7).
  - Dup3 = HA7 (0.2-0.3).

Detailed laboratory QA/QC results are presented on the laboratory testing certificates presented in Appendix G and summarised in Table F1 in Appendix F.

Based on the information referenced above, it was concluded that soil data is of an acceptable quality to achieve the objectives of this Phase 2 ESA, with the following comments:

- Soil and groundwater Relative Percent Differences (RPDs) calculated between the respective field duplicates and triplicates were of an acceptable criteria (<40%).
- Soil and water trip spike (TS) were of an acceptable quality to confirm that there was no loss or gain of volatile concentrations in samples during fieldworks or during transportation to the laboratory (recoveries between 98% and 105%).
- Laboratory prepared trip blank (TB) for soil and water had non-detectable concertation of BTEX and TRH C_6-C_9.
- Internal laboratory quality control (surrogates, blanks, spike recoveries, laboratory duplicates) were generally within the predetermined laboratory acceptance limits.

9. Results

9.1 Field Observations

The key observations made during the fieldworks conducted can be summarised as follows (refer to borehole logs in Appendix C):

- The majority of the project site was covered in grass with outcrops of blackberry bushes and isolated stands of trees.
- The south-eastern portion of the site contained a residential house and three associated sheds.
- Stockpiles of manure were identified in the central portion of the site.
- One large dam covering an area of over 2000m^2 was located in the south-western portion of the site and a small dam was located along the mid-western boundary. No visible signs of contamination were noted in the dams.
- A small public carpark was located in the southwestern corner.
- Surface waste was identified mainly along the northern site boundary with Flynn Avenue; and to a lesser extent along the northwestern boundary with Twenty-Seventh Avenue.
- Modified surface soils covered much of the site, associated with historic market gardening activities.
- Localised inclusions noted in topsoil comprised the following: blue metal, gravel, small amounts of brick, tile, glass, plastic in selected testpits around the sheds and residential house.
- Underlying natural silty clays and/or stiff clays were encountered in all sampling locations.
- No odour, staining or other indicators of chemical contamination were identified in any of the boreholes or hand auger locations. All PID readings were <10ppm.
- No groundwater was intercepted in any of the sampling locations; localised waterlogging of the soils was noted around some of the low-lying areas and the dams.
- Groundwater samples were collected from wells installed at the adjoining 185 Fifteenth Avenue (former bus depot) as part of the Douglas Partners (2015) Phase 2 ESA (only MW2; MW9; MW24; MW25 could be found). Groundwater from three of the wells (MW9; MW24; MW25) was observed to be free of odour; light brown and slightly cloudy. Groundwater from MW2 (within the former UST pit) had a strong hydrocarbon odour; was dark grey and highly turbid with possible sheen (difficult to confirm due to dark nature of the groundwater).

9.2 Site Criteria

Based on the proposed development including a child care centre, soil results were assessed against the following guidelines:

- NEPM (2013) Health Investigation Levels: HIL A Residential with garden/accessible soil (including child care centre) from Table 1A(1). Of relevance to the current investigation, the HIL A applies to metals, PAHs (including BaP TEQ), and OCPs.
- NEPM (2013) Health Screening Levels: HSL A for a clay soil (0m - <1m) taken from Table 1A(3). The HSLs apply to vapour intrusion for TRH (F1 and F2 Fractions), BTEX, and naphthalene.
- NEPM 2013 Health Screening Levels for Asbestos, residential A taken from Table 7.
- NEPM (2013) Ecological investigation levels (EIL) and ecological screening levels (ESL) taken from Table 1B(1); Table 1B(2); Table 1B(3) for urban residential and public open space.

- Surface water from the dams and groundwater results from the adjoining hydraulically up-gradient site were compared to NEPM (2013) GILs for Fresh Waters provided in Table 1C.

9.3 Soil Results and Interpretation

Based on a review of the summarised analytical results (Appendix B) and borehole logs (Appendix C), the following is noted (complete laboratory transcripts provided in Appendix G):

- All metals, OCPs, TRH, BTEX, PAH, phenols were below the adopted site criteria (human health and ecological).
- One sample collected from fill material at TP02 had asbestos (chrysotile, amosite and crocidolite) as ACM (1.26%w/w) and DA/AF (0.0134%w/w). Testpit TP2 was located in the vicinity of the shed in Lot 346 in the southeastern portion of the site. It is noted that TP02 is in the vicinity of the two confirmed ACM fragments identified in the Golder (2015) Phase 1 ESA.
- Nutrient nitrogen and phosphorous concentrations were highest near the large dam in the southwestern portion of the site (maximum 4800mg/kg and 1100mg/kg respectively).

Zoic note that the following areas could not be sampled as part of the Phase 2 ESA fieldworks:

- Footprints of residential house and sheds were unable to be sampled.
- Due to the depth of the dams, sediment samples were unable to be collected.
- Due to thick blackberry bush cover, some areas of the site were unable to be accessed (primarily west of the large dam).

It is considered that the omission of sampling in the above listed areas does not impact the conclusions that have been made on the site suitability for the proposed FABH; however some confirmatory sampling should be carried following the demolition of the structures in the south-eastern portion of the site.

9.4 Surface Water Results and Interpretation

The sample 'Dam1' was collected from the small dam along the mid-western boundary; 'Dam2' was collected from the large dam in the south-western portion of the project site. Results from the surface samples are presented in Table 6 and Table 7 (Appendix B). In summary:

- Organochlorine pesticides (OCP) concentrations were below laboratory detection limits in both dams.
- Heavy metals concentrations were below the respective guideline concentrations, with the exception of a slight copper exceedance in Dam1 (concentration of 2ug/L above the criteria of 1.4ug/L).
- Nitrogen and phosphorous nutrient concentrations were one order- and two-orders of magnitudes higher in the small dam (Dam1) than in the large dam (Dam2). Nitrogen concentrations (44mg/L and 1.8mg/L) and phosphorous concentrations (3.7mg/L and 0.008mg/L) in both dams are noted to be above the Victoria Department of Environment and Primary Industries (August 2013) 'maximum desirable concentration to minimise changes of algal blooms'. It was noted during fieldworks that both dams were clear, odourless and free of visual indicators of algal blooms.

9.5 Groundwater Results and Interpretation

As part of the Douglas Partners (July 2015) Phase 2 ESA for the adjoining property to the east, 185 Fifteenth Avenue, six groundwater monitoring wells were installed across the former bus depot.

Given the absence of any apparent onsite sources of potential groundwater contamination, it was considered that the hydraulically up-gradient former bus depot was a potential source of groundwater impact that could migrate onto the current site.

Four of the six groundwater wells from 185 Fifteenth Avenue were able to be found and sampled as part of the current Phase 2 ESA to provide information on the quality of groundwater migrating onto the current project site.

Results from MW2, MW9, MW24 and MW25 as sampled by Zoic (May 2016) are presented in Appendix B, Table 6 and Table 7 (refer to Figure 4 for Douglas Partners' well locations).

Based on the analytical results the following comments are made:

- Based on the reduced levels, as shown in Figure 4, groundwater from 185 Fifteenth Avenue flows in a south-westerly direction.
- Groundwater wells representing water quality migrating onto the current project site are considered to be MW24 and MW25. Groundwater from these two locations did not contain petroleum hydrocarbons (TRH) or monocyclic aromatic hydrocarbons (BTEX) above laboratory detection limits; metals were generally below the adopted site criteria, with the exception of cadmium and copper marginally above the adopted GILs in MW25 (copper concentration of 4ug/l vs GIL of 1.4ug/L; and cadmium concentration of 0.5ug/L vs GIL of 0.2ug/L).
- For the other two wells (MW2 and MW9) sampled on the former bus depot, residual petroleum hydrocarbons were only detected in MW2.
- Douglas Partners report that MW2 targeted the location of former USTs. Groundwater from MW2 had strong hydrocarbon odour noted during purging and sampling and was noted to be dark grey with a possible sheen.
- Analytical results from MW2 had concentration of lead, Benzene, Toluene, Ethylbenzene and Xylenes above the adopted criteria; and TRH fraction at elevated concentrations (noting that groundwater in clay 4-8m bgl is 'non-limiting' for petroleum hydrocarbons).
- Given the inferred flow path, groundwater from MW2 is unlikely to migrate onto the current site and is therefore not of direct relevance in determining the likely groundwater quality for the current project site.

Zoic conclude that based on the current data there is no evidence to suggest contaminated groundwater from 185 Fifteenth Avenue will migrate and impact the current site.

10. Conclusions and Recommendations

Zoic has completed this Phase 2 ESA for 195 Fifteenth Avenue, West Hoxton, which forms part of the proposed Fifteenth Avenue Business Hub (FABH).

Based on the field observations and evaluation of analytical soil results from across the 50 sampling locations, no areas of gross contamination were identified and the site is considered generally suitable for the proposed development (including child care centre) with the exception of the following:

- Asbestos (ACM, FA/AF) were identified in TP2 near one of the sheds in the south-eastern portion of the site. Based on the previous Golders (2015) Phase 1 ESA, this portion of the site was previously found to contain two confirmed ACM fragments.
- Localised dumped household waste and rubbish identified along the northern boundary with Flynn Avenue and to a lesser extent along the north-western boundary with Twenty-Seventh Avenue are aesthetically unsuitable.

Based on the desktop investigation, field work and analytical results, and subject to the Limitations presented in Section 11 of this report, Zoic concludes that no gross contamination was identified and the site is generally suitable for the proposed development in its current state. However, the following are required to be addressed:

- A hazardous materials survey should be completed on the residential house and sheds in accordance with the requirements of Australian Standard AS 2601. Asbestos should be removed in accordance with Code of Practice: How to Safely Remove Asbestos (SWA 2011) and relevant WorkCover NSW guidance. A clearance certificate must be issued by a competent person prior to commencement of demolition works.
- The south-eastern portion of the site around the residential house and sheds requires near surface asbestos remediation and validation (refer to Figure 3). A Remedial Action Plan (RAP) should be prepared by a suitably qualified environmental consultant to ensure that these works are completed in accordance with relevant guidelines and regulations including NEPM (2013), WA DoH (2009) Guidelines for the Assessment, Remediation and Management of Asbestos Contamination in Western Australia, SWA (2011), WHS Regulations (2011) and WorkCover NSW guidance.
- A protocol is to be prepared and implemented during civil and construction works for managing unexpected finds of contamination or sources asbestos fragments.
- Following demolition of site structures, confirmatory samples should be collected from within former building footprints to ensure that the underlying soils are suitable for the proposed land uses.
- In the event that onsite dams are to be drained and backfilled, further analysis may be required to ensure that waters and associated sediments are disposed of in accordance with the requirements of the Protection of Environment Operations Act 1997.
- Localised dumped debris and household waste were identified along the northern and north-western fenced boundaries should be removed and disposed appropriately to a licensed landfill.

Zoic conclude that based on the current data there is no evidence to suggest contaminated groundwater from the adjacent site will migrate and impact the current site.

11. Limitations

This report has been prepared for use by the Client who commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the Client and other parties. The findings of this report are based on the scope of work outlined in Section 1. The report has been prepared specifically for the Client for the purposes of the commission, and use by any nominated third party in the agreement between Zoic and the Client. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party (other than where specifically nominated in an agreement with the Client).

This report relates to only this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the Client, or amended in any way without prior approval by Zoic.

Subject to the scope of work, Zoic's assessment was limited strictly to identifying typical environmental conditions associated with the subject property area and does not include evaluation of any other issues.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigation.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work conducted for the Client.

The absence of any identified hazardous or toxic materials on the site should not be interpreted as a guarantee that such materials do not exist on the site.

All conclusions regarding the site are the professional opinions of the Zoic personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Zoic assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Zoic, or developments resulting from situations outside the scope of this project.

Zoic is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The Client acknowledges that this report is for its exclusive use.

APPENDIX A – FIGURES

LEGEND:

- 195 Fifteenth Avenue (current site)
- 185 Fifteenth Avenue
- Fifteenth Avenue Business Park

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FIGURE 1

Fifteenth Avenue Business Park Site Boundary

Detailed Site Investigation,
195 Fifteenth Avenue, West Hoxton, NSW

LEGEND:

- Test pits
- Hand auger

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FIGURE 2

Sampling Points

Detailed Site Investigation,
195 Fifteenth Avenue, West Hoxton, NSW

LEGEND:

Zoic Phase II Environmental Site Assessment, 2016

Golder Phase I Environmental Site Assessment, 2015

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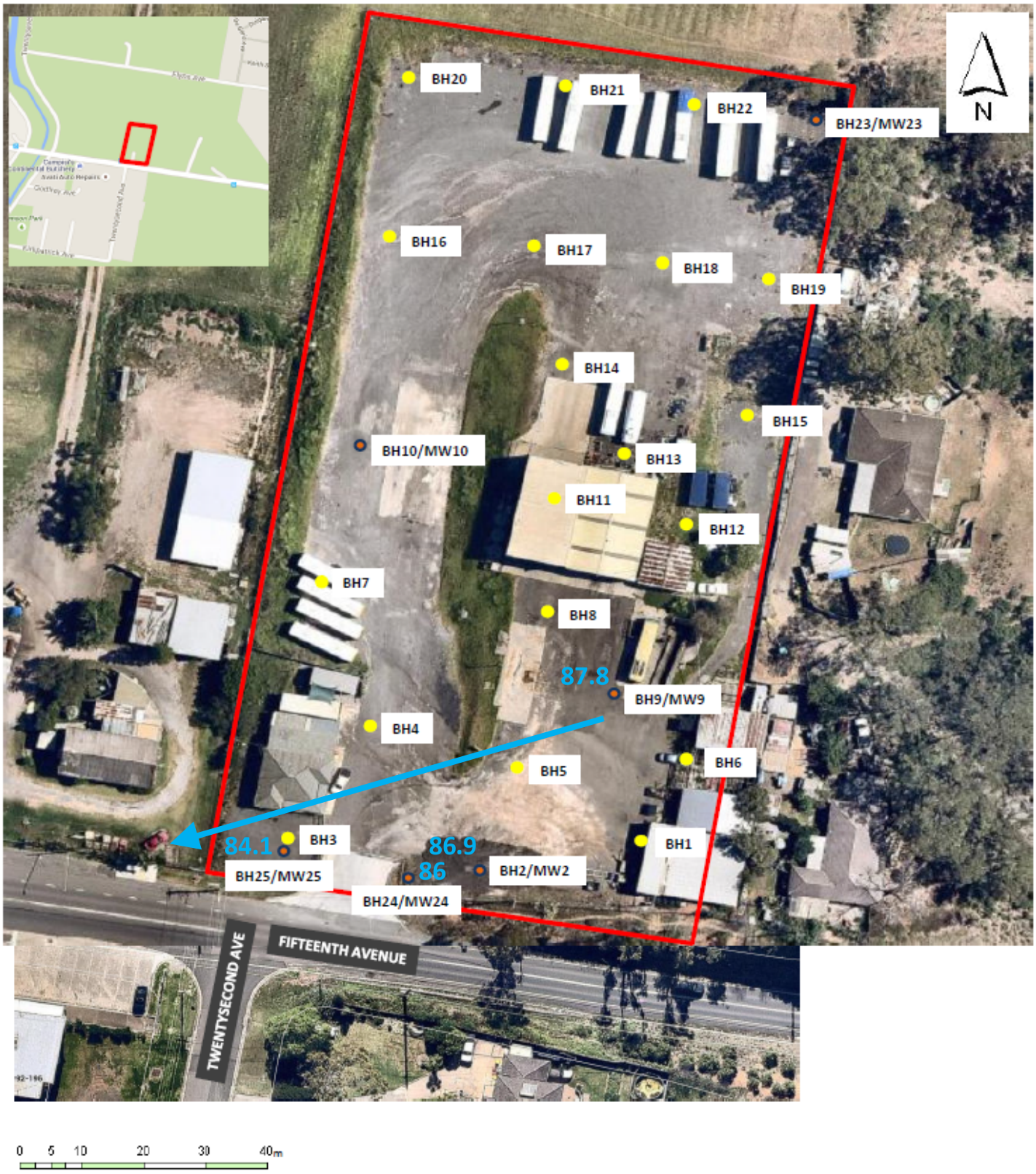
FIGURE 3

Areas Requiring Remediation

Detailed Site Investigation,
195 Fifteenth Avenue, West Hoxton, NSW



LEGEND:

- Douglas Partner Borehole (2015)
- Groundwater Monitoring Well (DP, 2015)

86.9 Groundwater Level (RL) – May 2016

Figure sourced from Douglas Partner (2015) Phase 2 ESA

FIGURE 4

Inferred Direction of Flow (from 185 Fifteenth Ave)

Detailed Site Investigation
195 Fifteenth Avenue, West Hoxton, NSW

Western Sydney Parkland Trust

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FIGURE 10: Indicative Site Layout Plan

APPENDIX B – RESULT SUMMARY TABLES

Table T1: Summary of Metals and BTEX in soils

			Metals								BTEX			
	Total Nitrogen	Phosphorus	Lead	Mercury	Nickel	Arsenic	Cadmium	Chromium	Copper	Zinc	Benzene	Toluene	Ethylbenzene	Xylene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	10	10	1	0.1	1	4	0.4	1	1	1	0.2	0.5	1	1
HIL A / HSL A	**-**	**-**	**300**	**40**	**400**	**100**	**20**	**100**	**6000**	**7400**	**0.7**	**480**	**NL**	**110**
Ecological	-	-	1100	-	270	100	-	320	190	270	65	105	125	45
TP01 0.0-0.2	-	-	23	<0.1	33	5	<0.4	30	41	63	-	-	-	-
TP 0.2 0.5	-	-	55	<0.1	15	9	0.6	24	29	170	<0.2	<0.5	<1	<1
TP03 0.2	-	-	23	<0.1	14	<4	<0.4	6	22	52	<0.2	<0.5	<1	<1
TP04 0.2	-	-	30	<0.1	39	<4	<0.4	39	48	95	-	-	-	-
TP05 0.2-0.3	-	-	35	<0.1	12	5	<0.4	11	42	110	-	-	-	-
TP06 0.2-0.3	630	200	68	<0.1	11	<4	<0.4	8	15	31	-	-	-	-
TP06 0.6-0.7	-	-	11	<0.1	5	5	<0.4	17	20	20	-	-	-	-
TP07 0.5-0.6	-	-	17	<0.1	15	7	<0.4	26	32	38	-	-	-	-
TP07 0.8-0.9	-	-	13	<0.1	6	7	<0.4	18	19	26	-	-	-	-
TP08 0.5-0.6	-	-	21	<0.1	12	8	<0.4	19	31	44	-	-	-	-
TP08 0.8-0.9	-	-	13	<0.1	6	6	<0.4	16	24	26	-	-	-	-
TP09 0.3-0.4	-	-	22	<0.1	61	4	<0.4	81	29	78	-	-	-	-
TP10 0.1-0.2	-	-	18	<0.1	6	11	<0.4	14	18	37	-	-	-	-
TP11 0.2-0.3	-	-	20	<0.1	10	8	<0.4	21	41	53	-	-	-	-
TP12 0.1-0.2	-	-	19	<0.1	11	8	<0.4	21	35	46	-	-	-	-
TP13 0.1-0.2	-	-	17	<0.1	11	7	<0.4	18	28	43	-	-	-	-
TP14 0.3-0.4	-	-	16	<0.1	10	7	<0.4	18	29	46	-	-	-	-
TP14 0.9-1.0	-	-	19	<0.1	10	5	<0.4	12	50	47	-	-	-	-
TP15 0.1-0.2	-	-	16	<0.1	9	7	<0.4	19	28	40	-	-	-	-
TP16 0.2-0.3	-	-	19	<0.1	9	7	<0.4	21	29	33	-	-	-	-
TP16 0.7-0.8	-	-	11	<0.1	5	6	<0.4	15	24	19	-	-	-	-
TP17 0.1-0.2	830	510	18	<0.1	10	8	<0.4	25	32	43	-	-	-	-
TP17 0.5-0.6	-	-	14	<0.1	11	7	<0.4	22	25	46	-	-	-	-
TP18 0.1-0.2	710	260	10	<0.1	7	7	<0.4	15	25	33	-	-	-	-
TP19 0.1-0.2	2100	870	14	<0.1	13	7	<0.4	17	34	63	-	-	-	-
TP19 0.3-0.4	450	280	12	<0.1	12	6	<0.4	17	29	47	-	-	-	-
TP19 0.9-1.0	-	-	16	<0.1	12	7	<0.4	18	40	71	-	-	-	-
TP20 0.1-0.2	-	-	18	<0.1	12	6	<0.4	23	32	50	-	-	-	-
TP21 0.2-0.3	-	-	13	<0.1	10	5	<0.4	17	27	44	-	-	-	-
TP22 0.2-0.3	-	-	19	<0.1	12	6	<0.4	14	17	42	-	-	-	-
TP23 0.2-0.3	-	-	12	<0.1	9	5	<0.4	18	25	31	-	-	-	-
TP23 0.5-0.6	-	-	13	<0.1	12	6	<0.4	21	31	48	-	-	-	-
TP24 0.2-0.3	-	-	15	<0.1	21	14	<0.4	23	26	40	-	-	-	-
TP24 0.7-0.8	-	-	15	<0.1	16	<4	<0.4	13	38	60	-	-	-	-
TP25 0.2-0.3	-	-	19	<0.1	15	5	<0.4	16	20	46	-	-	-	-
TP26 0.1-0.2	-	-	14	<0.1	9	5	<0.4	19	21	36	-	-	-	-
TP27 0.1-0.2	-	-	100	<0.1	8	8	<0.4	22	14	29	-	-	-	-
TP28 0.2-0.3	-	-	22	<0.1	11	6	<0.4	21	22	42	-	-	-	-
TP29 0.1-0.2	-	-	16	<0.1	10	5	<0.4	18	20	36	-	-	-	-
TP30 0.1-0.2	-	-	14	<0.1	7	10	<0.4	22	20	24	-	-	-	-
TP31 0.3-0.4	-	-	15	<0.1	9	6	<0.4	20	23	36	-	-	-	-
TP32 0.1-0.2	-	-	14	<0.1	8	8	<0.4	19	21	24	-	-	-	-
TP33 0.2-0.3	-	-	17	<0.1	6	8	<0.4	26	10	14	-	-	-	-
TP34 0.1-0.2	-	-	17	<0.1	9	6	<0.4	21	14	23	-	-	-	-
TP35 0.2-0.3	-	-	14	<0.1	8	7	<0.4	24	15	19	-	-	-	-
TP36 0.1-0.2	900	200	14	<0.1	8	7	<0.4	20	10	17	-	-	-	-
TP37 0.2-0.3	-	-	16	<0.1	10	5	<0.4	21	15	30	-	-	-	-
TP38 0.1-0.2	-	-	13	<0.1	7	6	<0.4	19	27	27	-	-	-	-
TP39 0.3-0.4	-	-	14	<0.1	7	7	<0.4	22	19	25	-	-	-	-
TP40 0.2-0.3	-	-	11	<0.1	8	7	<0.4	22	19	23	-	-	-	-
TP41 0.1-0.2	-	-	19	<0.1	13	<4	<0.4	13	38	55	<0.2	<0.5	<1	<1
TP42 0.1-0.2	-	-	21	<0.1	14	<4	<0.4	19	21	45	<0.2	<0.5	<1	<1
TP43 0.4-0.5	-	-	16	<0.1	7	<4	<0.4	18	26	31	<0.2	<0.5	<1	<1
HA01 0.1-0.2	-	-	57	<0.1	22	7	<0.4	24	52	110	-	-	-	-
HA02 0.0-0.1	-	-	26	<0.1	8	6	<0.4	17	26	80	<0.2	<0.5	<1	<1
HA03 0.1-0.2	2900	350	19	<0.1	9	5	<0.4	15	29	46	-	-	-	-
HA04 0.0-0.4	3300	430	-	-	-	-	-	-	-	-	-	-	-	-
HA05 0.1-0.2	2900	1100	16	<0.1	10	7	<0.4	16	29	60	-	-	-	-
HA06 0.0-0.1	4800	630	-	-	-	-	-	-	-	-	-	-	-	-
HA07 0.2-0.3	-	520	40	<0.1	16	8	<0.4	24	38	120	-	-	-	-

Table T2: Soil Results for TRH/TPH and PAHs

		TRH NEPM 2013				PAH															
		F1 (C6-C10 less BTEX)	F2 (>C10-C16 less Naphthalene)	>C16-C34	>C34-C40	Pyrene	Benzo(g,h,i)perylene	Indeno(1,2,3-c,d)pyrene	Fluoranthene	Acenaphthylene	Benzo(b,j,k)fluoranthene	Chrysene	Benzo(a)pyrene	Dibenz(a,h)anthracene	Benz(a)anthracene	Acenaphthene	Phenanthrene	Fluorene	Benzo(a)pyrene TEQ calc (zero)	Naphthalene	Total PAHs
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		25	50	100	100	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.5	1	0
HIL/HSL A, Clay 0-1m.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**5**	**300**
NEPM 2013 EIL / ESLs - Urban Residential		-	120	1300	5600	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	170	-
Field ID	**Location**																				
TP01 0.0-0.2	TP01 0.0-0.2	-	<50	180	150	0.3	0.1	<0.1	0.2	<0.1	<0.2	0.1	0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.5	<0.1	1.2
TP 0.2 0.5	TP 0.2 0.5	<25	<50	<100	<100	0.3	0.2	0.2	0.3	<0.1	0.4	0.2	0.2	<0.1	0.2	<0.1	0.1	<0.1	<0.5	<1	2.2
TP03 0.2	TP03 0.2	<25	<50	<100	<100	0.2	<0.1	<0.1	0.2	<0.1	<0.2	0.2	<0.05	<0.1	<0.1	<0.1	1.3	<0.1	<0.5	<1	3.4
TP04 0.2	TP04 0.2	-	<50	180	<100	0.3	<0.1	<0.1	0.2	<0.1	0.2	0.2	0.2	<0.1	0.1	<0.1	0.6	<0.1	<0.5	0.4	2.4
TP05 0.2-0.3	TP05 0.2-0.3	-	<50	120	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07 0.5-0.6	TP07 0.5-0.6	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP08 0.5-0.6	TP08 0.5-0.6	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP09 0.3-0.4	TP09 0.3-0.4	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP13 0.1-0.2	TP13 0.1-0.2	-	<50	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19 0.3-0.4	TP19 0.3-0.4	<25	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP21 0.2-0.3	TP21 0.2-0.3	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP23 0.2-0.3	TP23 0.2-0.3	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP24 0.2-0.3	TP24 0.2-0.3	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP25 0.2-0.3	TP25 0.2-0.3	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP26 0.1-0.2	TP26 0.1-0.2	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP32 0.1-0.2	TP32 0.1-0.2	-	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	ND
TP34 0.1-0.2	TP34 0.1-0.2	-	<50	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP38 0.1-0.2	TP38 0.1-0.2	-	<50	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP41 0.1-0.2	TP41 0.1-0.2	<25	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<1	ND
TP42 0.1-0.2	TP42 0.1-0.2	<25	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<1	ND
TP43 0.4-0.5	TP43 0.4-0.5	<25	<50	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<1	ND
HA02 0.0-0.1	HA02 0.0-0.1	<25	<50	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-

Table T3: Soil Results for Phenols, Organophosphorous Pesticides, Organochlorine Pesticides

	Phenols Total	Total Organophosphorous Pesticides	Total Organochlorine Pesticides	Aldrin (guideline aldrin+dieldrin)	Dieldrin (guideline aldrin+dieldrin)	Endosulfan II (guideline endosulfan)	DDT (guideline DDT+DDE+DDD)	Chlordane (cis) (guideline chlordane)	chlordane	Endrin	DDD (guideline DDT+DDE+DDD)	DDE (guideline DDT+DDE+DDD)	Heptachlor	Endosulfan I (guideline endosulfan)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HIL A / HSL A	**3000**	**-**	**-**	**6**	**6**	**270**	**240**	**50**	**50**	**10**	**240**	**-**	**6**	**270**
EIL / ESLs	-	-	-	-	-	-	180	-	-	-	-	-	-	-
TP01 0.0-0.2	-	-	ND	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP 0.2 0.5	<5	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP03 0.2	<5	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP04 0.2	<5	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP05 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP06 0.2-0.3	-	-	ND	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP06 0.6-0.7	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP07 0.5-0.6	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP08 0.5-0.6	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
TP10 0.1-0.2	-	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP11 0.2-0.3	-	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP12 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP13 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP14 0.3-0.4	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP15 0.1-0.2	-	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP16 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP17 0.1-0.2	-	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP18 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP19 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP20 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP21 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP22 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP23 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP24 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP25 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP26 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP27 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP28 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP30 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP32 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP33 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP35 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP36 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP38 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP42 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03 0.1-0.2	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
HA06 0.0-0.1	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA07 0.2-0.3	-	-	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T4: Summary of Asbestos Results

			Asbestos ID	ACM >7mm	FA / AF	Trace
				% w/w	**% w/w**	
NEPM 2013 HIL/HSL A Soil			**-**	**0.01%**	**0.001%**	
Sample ID	**Field ID**	**Matrix***				
-	-	-				
146058-81	TP01	SOIL	Not detected	na	na	-
146058-82	TP02	SOIL	**Chrysotile, amosite, crocidolite**	**1.2347**	**0.1522**	-
146058-83	TP05	SOIL	Not detected	na	na	-
146058-84	PT06	SOIL	Not detected	na	na	-
146058-85	TP07	SOIL	Not detected	na	na	-
146058-86	TP08	SOIL	Not detected	na	na	-
146058-87	TP11	SOIL	Not detected	na	na	-
146058-88	TP17	SOIL	Not detected	na	na	-
146058-89	TP19	SOIL	Not detected	na	na	-
146058-90	TP24	SOIL	Not detected	na	na	-
146058-91	TP40	SOIL	Not detected	na	na	-
146058-92	TP41	SOIL	Not detected	na	na	-
146058-93	TP42	SOIL	Not detected	na	na	-
146058-94	TP43	SOIL	Not detected	na	na	-

T5: Summary of QA/QC Results for Soil Investigation

				Moisture	Lead	Mercury (guidelines mercury - inorganic)	Nickel	Arsenic	Cadmium	Chromium (III+VI) (guidelines chromium VI and III)	Copper	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p) (guideline xylene total)	Xylene (o) (guideline xylene total)	C6-C10	C6 - C9
				%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	**Field ID**	**Location**	**Sample Date**																
146058-12	TP06 0.6-0.7	TP06 0.6-0.7	3/05/2016	24	11	<0.1	5	5	<0.4	17	20	20	-	-	-	-	-	-	-
146058-95	DUP1	TP06 0.6-0.7	3/05/2016	20	12	<0.1	6	6	<0.4	19	17	22	-	-	-	-	-	-	-
RPD %				***18***	***9***	***-***	***18***	***18***	***-***	***11***	***16***	***10***	-	-	-	-	-	-	-
146058-52	TP24 0.7-0.8	TP24 0.7-0.8	3/05/2016	18	15	<0.1	16	<4	<0.4	13	38	60	-	-	-	-	-	-	-
146058-96	DUP2 (A)	TP24 0.7-0.8	3/05/2016	15	15	<0.1	18	6	<0.4	15	35	66	-	-	-	-	-	-	-
RPD %				*18*	*0*	-	*12*	*40*	-	*14*	*8*	*10*							
ES1609818001	DUP2(B)	TP24 0.7-0.8	3/05/2016	17.2	17	<0.1	16	6	<1	15	30	55	-	-	-	-	-	-	-
RPD %				*5*	*13*	-	*0*	*40*	-	*14*	*24*	*9*							
146058-79	HA07 0.2-0.3	HA07 0.2-0.3	3/05/2016	19	40	<0.1	16	8	<0.4	24	38	120	-	-	-	-	-	-	-
ES1609818002	DUP3	HA07 0.2-0.3	3/05/2016	23.3	42	<0.1	15	12	<1	27	32	179	-	-	-	-	-	-	-
RPD %				*20*	*5*	-	*6*	*40*	-	*12*	*17*	*39*							
146058-97	TS	Trip Spike	2/05/2016	-	-	-	-	-	-	-	-	-	105	105	104	102	102	-	-
146058-98	TB	Trip Blank	2/05/2016	0.2	-	-	-	-	-	-	-	-	<0.2	<0.5	<1	<2	<1	<25	<25

Table T6: Summary of Groundwater Results for Inorganics, Heavy Metals, BTEX and Naphthalene

							Inorganics						Metals								BTEXN					
							Nitrogen (Total)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Phosphorus - Total	Arsenic (guidelines arsenic III and V)	Cadmium	Chromium (III+VI) (guidelines chromium VI and III)	Copper	Lead	Mercury (guidelines mercury - inorganic)	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p) (guideline xylene total)	Xylene (o) (guideline xylene total)	Naphthalene
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							0.1	5	5	5	5	0.05	1	0.1	1	1	1	0.05	1	1	1	1	1	2	1	1
NEPM 2013 GIL Fresh Waters							TBD	-	-	-	-	-	13	0.2	-	1.4	3.4	0.06	11	8	950	-	-	-	350	16
NEPM 2013 GIL Drinking Water							-	-	-	-	-	-	10	2	-	2000	10	1	20	-	1	800	300	-	-	-
NEPM 2013 HSL A&B Groundwater - Residential. Clay 4m to <8m							-	-	-	-	-	-	-	-	-	-	-	-	-	-	5000	NL	NL	-	-	NL
Sample ID	**Field ID**	**Well code**	**Date**	**GW Depth**	**Depth Cat.**																					
146064-1	MW2	MW2	3/05/2016	7.2	4-<8m		-	-	-	-	-	-	<1	<0.1	<1	<1	6	<0.05	5	1	800	4300	1400	4900	2100	420
146064-2	MW9	MW9	3/05/2016	7.8	4-<8m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	<1
146064-3	MW24	MW24	3/05/2016	6.7	4-<8m		-	-	-	-	-	-	<1	<0.1	<1	<1	<1	<0.05	2	6	<1	<1	<1	<2	<1	<1
146064-4	MW25	MW25	3/05/2016	5.7	4-<8m		-	460	460	<5	<5	-	<1	0.5	<1	4	<1	<0.05	10	14	<1	<1	<1	<2	<1	<1
146064-5	DAM1	DAM1	3/05/2016	0	-		44	-	-	-	-	3.7	1	<0.1	<1	2	<1	<0.05	<1	<1	-	-	-	-	-	-
146064-6	DAM2	DAM2	3/05/2016	0	-		1.8	-	-	-	-	0.08	1	<0.1	<1	<1	<1	<0.05	<1	<1	-	-	-	-	-	-

Table T7: Summary of Groundwater Results for TRH/TPH and MAHs

Notes:

a. all VOC results below detection limit, with the exception of cyclohexane

					TRH NEPM 2013						TPH				Monocyclic aromatic hydrocarbons									Total Organochlorine Pesticides	Total Chlorinated Hydrocarbons	Total Halogenated Hydrocarbons	Total Halogenated Benzenes	Total VOCs
					C6-C10	>C10-C16	>C16-C34	>C34-C40	F1 (C6-C10 less BTEX)	F2 (>C10-C16 less Naphthalene)	C6 - C9	C10 - C14	C15 - C28	C29-C36	Styrene (Vinyl benzene)	n-propylbenzene	n-butylbenzene	1,3,5-trimethylbenzene	sec-butylbenzene	1,2,4-trimethylbenzene	tert-butylbenzene	isopropylbenzene	p-isopropyltoluene					
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					10	50	100	100	10	50	10	50	100	100	1	1	1	1	1	1	1	1	1	0.2	1	1	1	1
NEPM 2013 GIL Fresh Waters					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 GIL Drinking Water					-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 HSL A&B Groundwater - Residential. Clay 4m to <8m					-	-	-	-	NL	NL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Well code	**Date**	**GW Depth**	**Depth Cat.**	**Matrix**																								
MW2	3/05/2016	7.2	4-<8m	clay	37000	420000	67000	<10000	23000	420000	28000	520000	130000	<10000	<10	460	65	580	32	3300	<10	100	13	-	ND	ND	ND	ND / 380[d]
MW9	3/05/2016	7.8	4-<8m	clay	<10	<50	<100	<100	<10	<50	<10	<50	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW24	3/05/2016	6.7	4-<8m	clay	<10	<50	<100	<100	<10	<50	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	ND	ND	ND	ND
MW25	3/05/2016	5.7	4-<8m	clay	<10	<50	<100	<100	<10	<50	<10	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	ND	ND	ND	ND
DAM1	3/05/2016	-	-	SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-
DAM2	3/05/2016	-	-	SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-

T8: Summary of QA/QC Results for Groundwater Investigation

Notes:

- RPD: Relative Percent Difference

				Metals								BTEXN							TRH NEPM 2013						TPH			
				Arsenic (guidelines arsenic III and V)	Cadmium	Chromium (III+VI) (guidelines chromium VI and III)	Copper	Lead	Mercury (guidelines mercury - inorganic)	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p) (guideline xylene total)	Xylene (o) (guideline xylene total)	Naphthalene	C6-C10	>C10-C16	>C16-C34	>C34-C40	F1 (C6-C10 less BTEX)	F2 (>C10-C16 less Naphthalene)	C6 - C9	C10 - C14	C15 - C28	C29-C36
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	0.1	1	1	1	0.05	1	1	1	1	1	2	1	1	10	50	100	100	10	50	10	50	100	100
Sample ID	**Field ID**	**Well code**	**Date**																									
146064-7	DUP1	MW24	3/05/2016	<1	<0.1	<1	<1	<1	<0.05	2	6	<1	<1	<1	<2	<1	<1	<10	<50	<100	<100	<10	<50	<10	<50	<100	<100
146064-3	MW24	MW24	3/05/2016	<1	<0.1	<1	<1	<1	<0.05	2	6	<1	<1	<1	<2	<1	<1	<10	<50	<100	<100	<10	<50	<10	<50	<100	<100
RPD %				-	-	-	-	-	-	*0*	*0*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
146064-9	TB	TB	2/05/2016	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	<1	<10	-	-	-	<10	-	<10	-	-	-
146064-10	TS	TS	2/05/2016	-	-	-	-	-	-	-	-	99	98	100	106	105	-	-	-	-	-	-	-	-	-	-	-

APPENDIX C – BOREHOLE LOGS

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.241'; E: 150° 49.902'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5 m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP01**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1					Fill, sandy clay, dry with inclusion of gravel, brick and tile frar	Nasb, NO, NS
0.2		0.0	0.0-0.2			Asbestos sample (0.1-0.2)
0.3					Natural sandy clay with inclusions of gravel	
0.4			0.2-0.4			
0.5						
0.6						
0.7						
0.8						
0.9						
1						
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
2						
2.1						
2.2						
2.3						
2.4						
2.5						
2.6						
2.7						
2.8						
2.9						
3						
3.1						
3.2						
3.3						
3.4						
3.5						
3.6						
3.7						
3.8						
3.9						
4						
4.1						
4.2						
4.3						
4.4						
4.5						
4.6						
4.7						
4.8						
4.9						
5						
5.1						
5.2						
5.3						
5.4						
5.5						
5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.013'; E: 150° 49.055'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.4m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP02**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2					Gravel and blue metal	
0.3 0.4 0.5 0.6 0.7 0.8		6.8	0.5		Reworked sandy clay, dark brown, dry, with visible ash layer, inclusions of gravel, plastics, glass	NAsb, NO, NS Asbestos sample (0.1-0.2m)
0.9 1 1.1 1.2 1.3 1.4		1.2	0.9		Stiff clay, orange, no organic matter, dry	
1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.237'; E: 150° 49.923'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.0m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP03**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2		Reworked sandy silty loam, dark grey, inclusions of ash, gravel, metal.	
0.4 0.5 0.6 0.7 0.8 0.9 1		0.0	0.4		Natural silty clay, dark grey, stiff, dry	NAsb, NO, NS
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.247'; E: 150° 49.923'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP04**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		3.6	0.2		Reworked natural silty clay, dark brown, inclusions of gravel	
0.4 0.5 0.6		1.7	0.4		Natural stiff clay, red mottled, dry	NAsb, NO, NS
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.150'; E: 150° 49.550'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP05**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2-0.3		Natural silty clay, brown, thick grass cover, organic matter, dry	NAsb, NO, NS Asbestos sample (0.1-0.2)
0.4 0.5 0.6		0.0	0.3-0.5		Natural clay, mottled orange, stiff, dry	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.255'; E: 150° 49.904'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.0m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP06**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5		4.5	0.2-0.3		Fill with inclusions of sandstone, gravel, blue metal, ashy crumbly material	NAsb, NO, NS Asbestos sample (0.1-0.2)
0.6 0.7 0.8 0.9 1		2.8	0.6-0.7 DUP1		Natural stiff red brown clay	
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.241'; E: 150° 49.886'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.9m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP07**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2-0.3		Fill, with inclusions of crushed brick, sandstone, glass	NAsb, NO, NS Asbestos (0.1-0.2m)
0.4 0.5 0.6		3.5	0.5-0.6		Fill, brown clay with inclusions of gravel, brick tile	
0.7 0.8 0.9			0.8-0.9		Natural clay - mottled red grey, stiff	
1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.241'; E: 150° 49.884'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.1m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP08**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2-0.3		Fill, sandy clay with 85% blue metal, grass and roots	NAsb, NO, NS Asbestos (0.1-0.2m)
0.4 0.5 0.6 0.7 0.6		1.8	0.5-0.6		Fill, silty clay with 20% gravel	
0.9 1 1.1			0.8-0.9		Natural clay, stiff, mottled red grey.	
1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 56.214'; E: 150° 49.893'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.2m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP09**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		0.5	0.0-0.1		Topsoil- silty light clay, inclusion of vegetation/roots, gravel,	NAsb, NO, NS
0.3 0.4 0.5 0.6 0.7 0.8		0.0	0.3-0.4		Reworked sandy clay, dark brown, with inclusions of gravel, blue metal, roots.	
0.9 1 1.1 1.2		0.0	1.0-1.2		Nautural Silty clay, mottled oragne, dry, stiff.	
1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 56.214'; E: 150°49.912'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.9m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP10**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5		0.0	0.1-0.2		Natural topsoil sandy clay, dark brown, inclusions of gravels and roots	NAsb, NO, NS
0.6 0.7 0.8 0.9			0.8-0.9		Natural silty clay, mottled orange, stiff, dry	
1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.211'; E: 150° 49.930'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP11**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5		0.0	0.2-0.3		Natural topsoil light silty clay, brown, with inclusions of gravel and roots	NAsb, NO, NS Asbestos (0.1-0.2m)
0.6 0.7			0.7-0.8		Natural silty clay, mottled orange, dry.	
0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.194'; E: 150° 49.935'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP12**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.1-0.2		Natural topsoil, brown, with inclusions of roots and gravel	NAsb, NO, NS Asbestos (0.0-0.1)
0.4 0.5 0.6			0.5-0.6		Natural silty clay, mottled orange, dry.	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.171'; E: 150° 49.921'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP13**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		4.2	0.1-0.2		Natural silty clay,with roots and gravel, stiff, brown	Nasb, NO, NS
0.5 0.6			0.6-0.7		Natural clay, stiff, mottled orange, dry.	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.167'; E: 150° 49.904'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.0m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP14**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5 0.6		0.0	0.3-0.4		Natural dry topsoil, gravel, bits of ash, glass, dry	NAsb, NO, NS
0.7 0.8 0.9 1			0.9-1.0		Natural clay, dry	
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.183'; E: 150° 49.899'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP15**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.1-0.2		Natural sandy clay, brown with roots.	NAsb, NO, NS
0.5 0.6 0.7			0.7		Natural clay, stiff, mottled orange, dry	
0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55,189'; E: 150° 49.916'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.9m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP16**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4			0.2-0.3		Natural topsoil, grass covered, brown, dry	NAsb, NO, NS
0.5 0.6 0.7 0.8			0.7-0.8		Natural clay, stiff, mottled orange, dry	
0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.200'; E: 150° 49.901'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP17**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3			0.2		Grass covered topsoil, silty loam, brown, dry	NAsb, NO, NS Asbestos (0.1-0.2m)
0.4 0.5 0.6			0.6		Natural clay, stiff, mottled orange, dry	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.143'; E: 150° 49.912'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.55m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP18**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5		0.0	0.1-0.2		Natural clay, stiff, mottled orange, dry	NAsb, NO, NS
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.154'; E: 150° 49.894'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	1.0m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP19**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		7.4	0.1-0.2		Fill, with 80% gravel, glass, plastic, blue metal, rubbish mixed through topsoil	NAsb, NO, NS Asbestos (0.1-0.2m)
0.4 0.5 0.6 0.7 0.8 0.9 1		0.0	0.3-0.4 0.9-1.0		Natural, stiff clay, mottled orange brown, dry	
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.150'; E: 150° 49.927'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP20**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		1.1	0.1-0.2		Topsoil sandy clay, with roots and gravel.	NAsb, NO, NS
0.3 0.4 0.5			0.4-0.5		Natural silty clay, mottled orange, dry, stiff.	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.163'; E: 150° 49.946'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP21**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3			0.2-0.3		Topsoil, sandy clay, with roots and gravel.	NAsb, NO, NS
0.4 0.5 0.6 0.7			0.6-0.7		Natural silty clay, mottled orange, dry, stiff	
0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.110'; E: 150° 49.946'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP22**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.2-0.3		Natural sandy clay, with roots and gravel.	NAsb, NO, NS
0.5 0.6			0.5-0.6		Natural silty clay, mottled orange, dry, stiff	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.107'; E: 150° 49.886'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP23**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5		0.0	0.2-0.3		Natural sandy clay, with roots and gravel.	NAsb, NO, NS
0.6 0.7			0.5-0.6		Natural silty clay, mottled orange, dry, stiff	
0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.091'; E: 150° 49.847'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.8m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP24**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		5.0	0.2-0.3		Natural sandy clay, with roots and gravel.	NAsb, NO, NS Sampled around rubbish disposal area Asbestos (0.1-0.2) Dup 2x2 taken
0.4 0.5 0.6 0.7 0.8			0.7-0.8 DUP2 (x2)		Natural silty clay, mottled orange, dry, stiff	
0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 35.088'; E: 150° 49.807'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP25**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2-0.3		Natural topsoil with grass, loose sandy clay, with roots	NAsb, NO, NS
0.4 0.5 0.6					Natural silty clay, mottled orange, dry, stiff	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 35.088'; E: 150° 49.807'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP26**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.1-0.2		Topsoil, sandy clay, with grass roots and gravel.	NAsb, NO, NS
0.4 0.5 0.6					Natural silty clay, mottled orange, dry, stiff	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.081'; E: 150° 49.743'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP27**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4 0.5 0.6		0.0	0.1-0.2 0.5-0.6		Natural topsoil, loose sandy clay, with grass, roots	NAsb, NO, NS
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.126'; E: 150° 49.774'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.4m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP28**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.2-0.3		Natural topsoil, loose sandy clay, with grass, roots	NAsb, NO, NS
0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.081'; E: 150° 49.743'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.3m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP29**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.1-0.2		Natural topsoil, loose sandy clay, with grass, roots.	NAsb, NO, NS
0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.130'; E: 150° 49.844'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.3m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP30**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3			0.1-0.2		Reworked topsoil, sandy clay	NAsb, NO, NS
0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.140'; E: 150° 49.861'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.4m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP31**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.3-0.4		Reworked topsoil, loose sandy clay	NAsb, NO, NS
0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.175'; E: 150° 49.872'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.6m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP32**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		0.0	0.1-0.2		Reworked topsoil, loose sandy clay	NAsb, NO, NS
0.3 0.4 0.5 0.6					Natural silty clay, mottled orange, dry, stiff	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.167'; E: 150° 49.827'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP33**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.2-0.3		Natural topsoil, sandy clay	NAsb, NO, NS
0.5					Natural silty clay, mottled orange, dry, stiff	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.195'; E: 150° 49.850'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP34**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.1-0.2		Natural topsoil, sandy clay	NAsb, NO, NS
0.5					Natural silty clay, mottled orange, dry, stiff	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.185'; E: 150° 49.825'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP35**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description (adopted from MW03D)	Observations/Comments
0.1 0.2 0.3		1.5	0.2-0.3		Reworked natural topsoil, sandy clay	NAsb, NO, NS
0.4 0.5					Natural silty clay, mottled orange, dry, stiff	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.130'; E: 150° 49.844'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP36**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		0.0	0.1-0.2		Natural topsoil, loose sandy clay	NAsb, NO, NS
0.3 0.4 0.5					Natural silty clay, mottled orange, dry, stiff	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6					0	

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.156'; E: 150° 49.790'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.8m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP37**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3		0.0	0.2-0.3		Reworked natural topsoil, sandy clay.	NAsb, NO, NS
0.4 0.5 0.6 0.7 0.8					Natural silty clay, mottled orange, dry, stiff	
0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.156'; E: 150° 49.790'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.8m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP37**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		0.0	0.1-0.2		Reworked natural topsoil, sandy clay.	NAsb, NO, NS
0.3					Natural silty clay, mottled orange, dry, stiff	
0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.203'; E: 150° 49.842'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP39**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2					Topsoil -sandy clay	NAsb, NO, NS
0.3 0.4 0.5 0.6		0.0	0.3-0.4		Natural clay, silty, stiff and dry	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.155'; E: 150° 49.872'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.3m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP40**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2 0.3 0.4		0.0	0.2-0.3		Reworked natural topsoil, sandy clay.	NAsb, NO, NS Asbestos (0.1-0.2m)
0.5 0.6 0.7					Natural clay, mottled orange, dry, stiff	
0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.241'; E: 150° 49.824'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0
	0.8

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP41**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1					Fill - compacted clay with 50% gravel	NAsb, NO, NS
0.2		0.0	0.2-0.3		Fill, clay, stiff and compacted with minor inclusions of grave	Asbestos (0.1-0.2m)
0.3						
0.4					Natural clay, stiff, dry	
0.5						
0.6						
0.7						
0.8						
0.9						
1						
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
2						
2.1						
2.2						
2.3						
2.4						
2.5						
2.6						
2.7						
2.8						
2.9						
3						
3.1						
3.2						
3.3						
3.4						
3.5						
3.6						
3.7						
3.8						
3.9						
4						
4.1						
4.2						
4.3						
4.4						
4.5						
4.6						
4.7						
4.8						
4.9						
5						
5.1						
5.2						
5.3						
5.4						
5.5						
5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.237'; E: 150° 49.891'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.7

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP42**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2		3.2	0.1-0.2		Fill -compacted clay with gravel	NAsb, NO, NS Asbestos (0.1-0.2m)
0.3 0.4 0.5 0.6					Natural clay, mottled orange, dry, hard	
0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

ZF004: Test Pit Log Form

DATE:	3-May-16
JOB NO:	16035
JOB NAME:	Fifteenth Ave Business Hub
SITE ADDRESS:	195 Fifteenth Ave
GPS COORDINATES	S: 33° 55.156'; E: 150° 49.790'
CONTRACTOR:	
METHOD:	Excavator
BOREHOLE DIAM.	
FINAL DEPTH	0.5m

SHEET NO:	1 OF 1
BOREHOLE NO:	**TP43**
LOGGED BY:	OC Phang
CHECKED BY:	Silja Kuerzinger

NAsb	No visual asbestos
NO	No odour noted
NS	No staining noted

DEPTH (m)	GW Level (m)	SAMPLE PID (ppm)	SAMPLE Depth (m)	Graphic Log	Soil Description	Observations/Comments
0.1 0.2					Fill,clay with gravel	NAsb, NO, NS Asbestos (0.1-0.2m)
0.3 0.4 0.5		2.0	0.4-0.5		Reworked compacted clay, hard, dry	
0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5 5.6						

Appendix D – DATA QUALITY OBJECTIVES

D1. Step 1 – Defining the Problem

D1.1 Concise Description of the Problem

The site required an assessment to ensure it is suitable for its proposed FABH commercial (including childcare centre) development.

Based on the historic use of the site, potential sources of contamination are limited to agricultural use of the site.

D1.2 Planning Team Members and Decision Maker

The project was commissioned by Philip Perrie on behalf of Alexander Perrie & Co Pty Ltd. The Zoic project team included:

Zoic Project Principal:	Rebeka Hall
Zoic Project Manager:	Silja Kuerzinger
Zoic Field Scientist:	Oy Cheng

D1.3 Summary of Available Resources, Constraints and Relevant Deadlines

The project team was assigned to conduct the Phase 2 ESA based on them having considerable relevant experience in projects of this nature.

D2. Step 2 – Identify the Decision

Decision Statement Linking the Principal Study Question to Possible Actions that will Solve the Problem

Based on the decision making process for assessing urban redevelopment sites detailed in Appendix I of DEC (2006) and modified to relate to the specific redevelopment requirements for this Phase 2 ESA report, the following decisions were required to be made:

- Do the soils at the site exceed the adopted NEPM 2013 HIL A / HSL A site criteria? If this is the case, then additional assessment, management or remedial action will be required.
- Are there any aesthetic issues relating to the soils at the site? If this is the case, then additional assessment, management or remedial action will be required.

D3. Step 3 – Identification of Inputs into the Decision

D3.1 List of Informational Inputs Needed to Resolve the Decision Statement

- Golder Associates (May 2015) Phase 1 ESA for 195 Fifteenth Avenue, West Hoxton.
- Douglas Partners (July 2015) Phase 2 ESA for 185 Fifteenth Avenue, West Hoxton.
- Published soil and geology maps,
- NSW EPA public registers on contaminated land and PoEO licenses.

D3.2 Identification of the Media to be Assessed

Soil and dam water were the onsite media that required assessment.

Groundwater from the adjoining eastern property (185 Fifteenth Avenue) was sampled to provide an indication of the quality of groundwater migrating on to the project site.

D3.3 List of Environmental Variables or Characteristics that will be Measured

Soil the following analytical suite was adopted: M8, TRH, BTEX, PAH, OCP, PCB, phenols, asbestos, selected nutrients (nitrogen and phosphorous). Also the composition of soil was described, with any ACM, visual or olfactory signs of contamination recorded (refer testpit logs).

Groundwater (from adjoining property): TRH, BTEX, PAH, VOC, M8.

Surface water: OCP, M8, nutrients (phosphorus and nitrogen).

D3.4 Identification of Site Criteria for Each Medium of Concern

The soil site criteria to be adopted for this study are as follows:

- NEPM 2013 Health Investigation Levels (HIL) and Health Screening Levels (HSL) for Residential A (due to proposed childcare centre); EIL; ESL.
- NEPM 2013 Groundwater GILs and drinking water criteria (where relevant).
- Victoria Department of Environment and Primary Industries (August 2013) guidelines for nutrient values

D3.5 Identification of Analytical Methods that are Required for Chemicals of Potential Concern so that Assessment can be made Relative to the Site Criteria

The table below outlines the analytical methods of the NATA accredited primary laboratory Envirolab Services.

Table D3.1 Soil Analytical Methods

Analyte	Analytical Method
Asbestos	PLM Dispersion Staining (AS4964-2004)
Mercury	Cold Vapour AAS (USEPA 7471A)
Other Metals	ICP-AES (USEPA 200.7)
BTEX, TRH	P&T GC/MS GC/FID (USEPA 8260/8000)

Analyte	Analytical Method
VOC	GC/MS (USEPA 8260)
sVOC	GC/MS (USEPA 8270)
pH	Inorg-001 (APHA 22nd ED, 4500-H+)

D3.5 List of Informational Inputs Required to Resolve the Decision Statement

- Field measurements (PID) and observations of ACM or visual/olfactory indications of contamination in soils;
- Laboratory analyses of soil;
- Conceptual site model.

D4. Step 4 – Defining the Study Boundaries

D4.1 Detailed Description of the Spatial and Temporal Boundaries of the Problem

The lateral study area is presented in Figure 1, **Appendix A**. The vertical extent of the investigation was within the natural soils at a maximum depth of 1.4m bgl.

D4.2 Any Practical Constraints that May Interfere with the Study

Practical constraints were limited to site access constraints associated with the following:

- No sampling within building/shed footprints.
- No sediment sampling from the base of the two dams.
- Some sections of the site were covered with large extents of blackberry bushes that were unable to be penetrated.

D5. Step 5 – Developing Decision Rules

The decision rules adopted to answer the decisions outlined in Section D2 are summarised in the following table:

Table D5.1 Summary of Decision Rules

No.	Decision to be Made	Decision Rule
1	Are the soils at the site chemically and aesthetically suitable for	YES, if… • Analytical results are below the adopted site criteria. AND if

No.	Decision to be Made	Decision Rule
	the proposed development?	• The investigation does not identify significant aesthetic issues including odours, discoloration or deleterious in shallow soil. Otherwise NO.

D6. Step 6 – Specify Limits on Decision Errors

D6.1 Decision-maker's Tolerable Decision Error Rates Based on a Consideration of the Consequences of Making an Incorrect Decision

The pre-determined data quality indicators (DQIs) established for the project are discussed below in relation to precision, accuracy, representativeness, comparability and completeness (PARCC parameters) as required by Step 6 of the DQO process.

Table D6.1 Data Quality Objectives and Indicators for Soil and Groundwater Samples

Data Quality Objective	Frequency conducted	Data Quality Indicator
Precision		
Intra-laboratory field duplicates	1/20 samples	>5xLOR: 50% RPD as primary sample for asbestos
Inter-laboratory field duplicates	1/20 samples	
Laboratory duplicates (Envirolab)	1/20 samples	>5xLOR: 50% RPD Not required for asbestos
Laboratory method blanks	1/20 samples	< LOR Not required for asbestos
Accuracy		
Matrix spikes	1/20 samples	Acceptable recoveries: 70 to 130% for metals and inorganics 60-140% for organics 10-140% for sVOC and speciated phenols

Data Quality Objective	Frequency conducted	Data Quality Indicator
		Not required for asbestos
Laboratory control spike	1/20 samples	As Matrix spikes Not required for asbestos
Surrogate spike	1/20 samples	As Matrix spikes Not required for asbestos
Representativeness		
Sampling handling storage and transport appropriate for media and analytes	-	Yes
Rinsate blanks	1 per day per equipment	Not required due to sampling protocols to prevent cross contamination. For groundwater, dedicated disposable bailors were used.
Trip Spike	1 per media	Yes (one for soil and one for GW)
Samples extracted and analysed within holding times.	Hold Times: 7 days - organics 6 months – inorganics	Yes
Comparability		
Standard operating procedures used for sample collection and handling (including decontamination)	All Samples	Yes
Standard analytical methods used for all analyses	All Samples	Yes
Consistent field conditions, sampling staff and laboratory analysis	All Samples	Yes
Limits of reporting appropriate and consistent	All Samples	Yes (noting selected GW detection limits were above criteria,

Data Quality Objective	Frequency conducted	Data Quality Indicator
		especially for MW2 where the sampled was required to be diluted).
Completeness		
Soil description and COCs completed and appropriate	All Samples	Yes
Appropriate documentation for testing	All Samples	Yes
Data set to be 95% complete after validation	All Samples	Yes

[1] - If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.

D7. Step 7 – Optimise Design

The Optimum Manner in which to Collect the Data Required to meet the Objectives for the Assessment and which will meet the Project DQOs

With consideration of historic use of the site being limited to agricultural land use, and the proposed development including commercial use (including childcare) it was considered that a reduced sampling density from that recommended on NSW EPA (1995) was justifiable for the 7.9 hectare site.

It is considered that based on the walkover site inspection and the 50 intrusive sampling locations, that the soil conditions across the site have been adequately characterised.

APPENDIX E – CALIBRATION CERTIFICATES

PID Calibration Certificate

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument MiniRae 3000
Serial No. 592-902419

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	**Low**	**High**	**TWA**	**STEL**
	Settings	✓	50ppm	100ppm	10ppm	25ppm
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

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

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		100ppm Isobutylene	NIST	SY123		100.1ppm

Calibrated by: SB **Sophie Boler**

Calibration date: **2/05/2016**

Next calibration due: **1/06/2016**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 09K100883

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		NA1416	pH 6.99
2. pH 4.00		pH 4.00		NF1636	pH 4.03
3. pH 10.00		pH 10.00		NH1870	pH 9.86
4. mV		231.8mV		NH1934/NH1935	232.0mV
5. EC		2.76mS		NF2056	2.75mS
6. D.O		0.00ppm		3829	0.00ppm
7. Temp		21.2°C		MultiTherm	21.3°C

Calibrated by: Lin Wang

Calibration date: 2/05/2016

Next calibration due: 1/06/2016

Oil / Water Interface Meter

Instrument Geotech Interface Meter (30M)
Serial No. 4253

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Calibrated by: _____ **Cella Ford**

Calibration date: **29/04/2016**

Next calibration due: **28/06/2016**

APPENDIX F – ASSESSMENT OF QA /QC

Table F1 QA/QC Results Summary

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	DQI Met ?
Precision				
Intra-laboratory field duplicates	1/20	Yes. 2 intra-laboratory duplicates for 50 primary samples. I intra-laboratory dup collected for GW	>5xLOR: 50% RPD	RPDs are presented in Appendix B. RPD <50% or close to laboratory detection limits
Inter-laboratory field duplicates	1/20	Yes. 2 intra-laboratory duplicates for 50 primary samples.		Yes (noting that no inter-laboratory duplicate was collected for groundwater).
Laboratory duplicates	1/20	Yes. 1 duplicates analysed by the lab.	>5xLOR: 50% RPD	Yes. The laboratory RPD acceptance criteria were generally <50%
Laboratory method blanks	1/10 Primary	Yes. 1 blank was analysed.	< LOR	Yes
Accuracy				
Matrix spikes	1/10	Yes	Acceptable recoveries: 70 to 130% for metals and inorganics 60-140% for organics 10-140% for sVOC and speciated phenols	Yes
Surrogate spikes	1/10	Yes		Yes
Representativeness				
Sampling handling storage and transport appropriate for media and analytes	All	Yes	Received by laboratory cooled and with container in good condition	All

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	DQI Met ?
			362.	
Rinsate blanks	NA	NA	<LOR	No rinsate samples taken.
Trip Spike	NA	NA	70 to 130% (inorganic) As specified by lab (organic)	Yes (all GW and soil spikes between 98% and 105% recovery).
Samples extracted and analysed within holding times.	All	Yes	Hold Times: 7 days - organics 6 months – inorganics	Yes
Comparability				
Standard operating procedures used for sample collection and handling (including decontamination)	All	Yes	Yes	Yes, refer to methodology in main report.
Standard analytical methods used for all analyses	All	Yes	Yes	Yes
Consistent field conditions, sampling staff and laboratory analysis	All	Yes	Yes	Yes
Limits of reporting appropriate and consistent	All	Yes	Yes	Yes
Completeness				
Soil description and COCs completed and appropriate	All	Yes	Yes	Yes, testpit logs and laboratory certificates are presented in Appendices C and G respectively.
Appropriate documentation for testing	All	Yes	Yes	Yes

APPENDIX G – LABORATORY CERTIFICATES

COC 5/5 11:10am

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:**	DSI FABH WSPT
Project Mgr:	Silja Kuerzinger	**PO No.:**	16035
Sampler:	SK / OC	**Envirolab Services Quote No. :**	
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000	**Date results required:**	11-May-16
Email:	silja.kuerziniger@zoic.com.au	**Or choose:**	standard
Phone:	9231 1045 mobile 488991718	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols						Provide as much information about the sample as you can
1	TP01 0.0-0.2	3-May-16	GLASS JAR	x	x		x		x										
2	TP01 0.2-0.4	3-May-16	GLASS JAR																
3	TP 0.2 0.5	3-May-16	GLASS JAR	x	x	x	x	x	x				x						
4	TP02 1.4	3-May-16	GLASS JAR																
5	TP03 0.2	3-May-16	GLASS JAR	x	x	x	x	x	x				x						
6	TP03 0.4	3-May-16	GLASS JAR																
7	TP04 0.2	3-May-16	GLASS JAR	x	x		x		x				x						
8	TP04 0.4	3-May-16	GLASS JAR																
9	TP05 0.2-0.3	3-May-16	GLASS JAR	x			x		x										
10	TP05 0.3-0.5	3-May-16	GLASS JAR																
11	TP06 0.2-0.3	3-May-16	GLASS JAR	x					x		x	x							
12	TP06 0.6-0.7	3-May-16	GLASS JAR	x					x										
13	TP07 0.2-0.3	3-May-16	GLASS JAR																
14	TP07 0.5-0.6	3-May-16	GLASS JAR	x	x		x		x										
15	TP07 0.8-0.9	3-May-16	GLASS JAR	x															

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

Job No: 146058
Date Received: 4/5
Time Received: 17:45
Received by: PH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:** DSI FABH WSPT	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	Silja Kuerzinger		
Sampler:	SK / OC	**PO No.:** 16035	**Phone:** 02 9910 6200
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000	**Envirolab Services Quote No. :**	**Fax:** 02 9910 6201
Email:	silja.kuerziniger@zoic.com.au	**Date results required:** 11-May-16	**E-mail:** ahie@envirolabservices.com.au
Phone:	9231 1045 mobile 488991718	**Or choose:** standard *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols						Provide as much information about the sample as you can
16	TP08 0.2-0.3	3-May-16	GLASS JAR																
17	TP08 0.5-0.6	3-May-16	GLASS JAR	x	x		x		x										
18	TP08 0.8-0.9	3-May-16	GLASS JAR	x															
19	TP09 0.0-0.1	3-May-16	GLASS JAR																
20	TP09 0.3-0.4	3-May-16	GLASS JAR	x	x		x												
21	TP09 1.0-1.2	3-May-16	GLASS JAR																
22	TP10 0.1-0.2	3-May-16	GLASS JAR	x					x	x									
23	TP10 0.8-0.9	3-May-16	GLASS JAR																
24	TP11 0.2-0.3	3-May-16	GLASS JAR	x					x	x									
25	TP11 0.7-0.8	3-May-16	GLASS JAR																
26	TP12 0.1-0.2	3-May-16	GLASS JAR	x					x										
27	TP12 0.5-0.6	3-May-16	GLASS JAR																
28	TP13 0.1-0.2	3-May-16	GLASS JAR	x			x		x										
29	TP13 0.6-0.7	3-May-16	GLASS JAR																
30	TP14 0.3-0.4	3-May-16	GLASS JAR	x					x										

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental
Project Mgr:	Silja Kuerzinger
Sampler:	SK / OC
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000
Email:	silja.kuerziniger@zoic.com.au
Phone:	9231 1045 mobile 488991718

Client Project Name and Number:	DSI FABH WSPT
PO No.:	16035
Envirolab Services Quote No. :	
Date results required:	11-May-16
Or choose:	standard

Note: Inform lab in advance if urgent turnaround is required - surcharge applies

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols						Provide as much information about the sample as you can
31	TP14 0.9-1.0	3-May-16	GLASS JAR	x															
32	TP15 0.1-0.2	3-May-16	GLASS JAR	x					x	x									
33	TP15 0.6-0.7	3-May-16	GLASS JAR																
34	TP16 0.2-0.3	3-May-16	GLASS JAR	x					x										
35	TP16 0.7-0.8	3-May-16	GLASS JAR	x															
36	TP17 0.1-0.2	3-May-16	GLASS JAR	x					x	x	x	x							
37	TP17 0.5-0.6	3-May-16	GLASS JAR	x															
38	TP18 0.1-0.2	3-May-16	GLASS JAR	x					x		x								
39	TP18 0.4-0.5	3-May-16	GLASS JAR																
40	TP19 0.1-0.2	3-May-16	GLASS JAR	x					x		x	x							
41	TP19 0.3-0.4	3-May-16	GLASS JAR	x	x	x	x				x								
42	TP19 0.9-1.0	3-May-16	GLASS JAR	x															
43	TP20 0.1-0.2	3-May-16	GLASS JAR	x					x										
44	TP20 0.4-0.5	3-May-16	GLASS JAR																
45	TP21 0.2-0.3	3-May-16	GLASS JAR	x	x		x		x										

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:** DSI FABH WSPT	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	Silja Kuerzinger		
Sampler:	SK / OC	**PO No.:** 16035	**Phone:** 02 9910 6200
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000	**Envirolab Services Quote No. :**	**Fax:** 02 9910 6201
Email:	silja.kuerziniger@zoic.com.au	**Date results required:** 11-May-16	**E-mail:** ahie@envirolabservices.com.au
Phone:	9231 1045 mobile 488991718	**Or choose:** standard *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols						Provide as much information about the sample as you can
46	TP21 0.6-0.7	3-May-16	GLASS JAR																
47	TP22 0.2-0.3	3-May-16	GLASS JAR	x					x										
48	TP22 0.5-0.6	3-May-16	GLASS JAR																
49	TP23 0.2-0.3	3-May-16	GLASS JAR	x	x		x		x										
50	TP23 0.5-0.6	3-May-16	GLASS JAR	x															
51	TP24 0.2-0.3	3-May-16	GLASS JAR	x	x		x		x										
52	TP24 0.7-0.8	3-May-16	GLASS JAR	x															
53	TP25 0.2-0.3	3-May-16	GLASS JAR	x	x				x										
54	TP26 0.1-0.2	3-May-16	GLASS JAR	x	x		x		x										
55	TP27 0.1-0.2	3-May-16	GLASS JAR	x					x										
56	TP27 0.5-0.6	3-May-16	GLASS JAR																
57	TP28 0.2-0.3	3-May-16	GLASS JAR	x					x										
58	TP29 0.1-0.2	3-May-16	GLASS JAR	x															
59	TP30 0.1-0.2	3-May-16	GLASS JAR	x					x										
60	TP31 0.3-0.4	3-May-16	GLASS JAR	x															

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:** DSI FABH WSPT	**Envirolab Services**
Project Mgr:	Silja Kuerzinger		12 Ashley St, Chatswood, NSW, 2067
Sampler:	SK / OC	**PO No.:** 16035	
Address:	Suite 4, Level 3, 105 Pitt Street	**Envirolab Services Quote No. :**	Phone: 02 9910 6200
	Sydney 2000	**Date results required:** 11-May-16	Fax: 02 9910 6201
Email:	silja.kuerziniger@zoic.com.au	**Or choose:** standard	E-mail: ahie@envirolabservices.com.au
Phone:	9231 1045 mobile 488991718	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	Contact: Aileen Hie

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols						Provide as much information about the sample as you can
61	TP32 0.1-0.2	3-May-16	GLASS JAR	x	x		x		x										
62	TP33 0.2-0.3	3-May-16	GLASS JAR	x					x										
63	TP34 0.1-0.2	3-May-16	GLASS JAR	x			x												
64	TP35 0.2-0.3	3-May-16	GLASS JAR	x					x										
65	TP36 0.1-0.2	3-May-16	GLASS JAR	x					x		x	x							
66	TP37 0.2-0.3	3-May-16	GLASS JAR	x															
67	TP38 0.1-0.2	3-May-16	GLASS JAR	x			x		x										
68	TP39 0.3-0.4	3-May-16	GLASS JAR	x															
69	TP40 0.2-0.3	3-May-16	GLASS JAR	x															
70	TP41 0.1-0.2	3-May-16	GLASS JAR	x	x	x	x	x											
71	TP42 0.1-0.2	3-May-16	GLASS JAR	x	x	x	x	x	x										
72	TP43 0.4-0.5	3-May-16	GLASS JAR	x	x	x	x	x											
73	HA01 0.1-0.2	3-May-16	GLASS JAR	x															
74	HA02 0.0-0.1	3-May-16	GLASS JAR	x		x	x	x											
75	HA03 0.1-0.2	3-May-16	GLASS JAR	x					x		x	x							

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:** DSI FABH WSPT	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	Silja Kuerzinger	**PO No.:** 16035	**Phone:** 02 9910 6200
Sampler:	SK / OC	**Envirolab Services Quote No. :**	**Fax:** 02 9910 6201
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000	**Date results required:** 11-May-16	**E-mail:** ahie@envirolabservices.com.au
Email:	silja.kuerziniger@zoic.com.au	**Or choose:** standard	**Contact:** Aileen Hie
Phone:	9231 1045 mobile 488991718	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols	NEPM 2013 Asbesots					Provide as much information about the sample as you can
76	HA04 0.0-0.4	3-May-16	GLASS JAR								X	X							
77	HA05 0.1-0.2	3-May-16	GLASS JAR	X							X	X							
78	HA06 0.0-0.1	3-May-16	GLASS JAR						X		X	X							
79	HA07 0.2-0.3	3-May-16	GLASS JAR	X					X		X								
80	HA08 0.1-0.2	3-May-16	GLASS JAR											X					
81	TP01	3-May-16	PLASTIC BAG											X					
82	TP02	3-May-16	PLASTIC BAG											X					
83	TP05	3-May-16	PLASTIC BAG											X					
84	PT06	3-May-16	PLASTIC BAG											X					
85	TP07	3-May-16	PLASTIC BAG											X					
86	TP08	3-May-16	PLASTIC BAG											X					
87	TP11	3-May-16	PLASTIC BAG											X					
88	TP17	3-May-16	PLASTIC BAG											X					
89	TP19	3-May-16	PLASTIC BAG											X					
90	TP24	3-May-16	PLASTIC BAG											X					

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental	**Client Project Name and Number:** DSI FABH WSPT	**Envirolab Services**
Project Mgr:	Silja Kuerzinger		12 Ashley St, Chatswood, NSW, 2067
Sampler:	SK / OC	**PO No.:** 16035	
Address:	Suite 4, Level 3, 105 Pitt Street	**Envirolab Services Quote No. :**	Phone: 02 9910 6200
	Sydney 2000	**Date results required:** 11-May-16	Fax: 02 9910 6201
Email:	silja.kuerziniger@zoic.com.au	**Or choose:** standard	E-mail: ahie@envirolabservices.com.au
Phone:	9231 1045 mobile 488991718	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols	NEPM 2013 Asbesots				Provide as much information about the sample as you can
91	TP40	3-May-16	PLASTIC BAG											x				
92	TP41	3-May-16	PLASTIC BAG											x				
93	TP42	3-May-16	PLASTIC BAG											x				
94	TP43	3-May-16	PLASTIC BAG											x				
95	DUP1	3-May-16	GLASS JAR	x					x									
96	DUP2 (A)	3-May-16	GLASS JAR	x														
	DUP2(B)	3-May-16	GLASS JAR	x		Please forward to ALS												
	DUP3	3-May-16	GLASS JAR	x		Please forward to ALS												
97	TS	2-May-16	VIAL			x	x											
98	TB	2-May-16	VIAL			x	x											

Relinquished by (company):	Zoic	**Received by (company):**	ELS
Print Name:	Silja Kuerzinger	**Print Name:**	PH
Date & Time:	5-May-16	**Date & Time:**	4/5 17:45
Signature:		**Signature:**	

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

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 146058

Client:
Zoic Environmental
Suite 4, Level 3, 105 Pitt St
Sydney
NSW 2000

Attention: Silja Kuerzinger

Sample log in details:

Your Reference:	**16035, DSI FABH WSPT**
No. of samples:	98 Soils
Date samples received / completed instructions received	04/05/2016 / 05/05/2016

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:	11/05/16 / 11/05/16
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. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	146058-3	146058-5	146058-41	146058-70	146058-71
Your Reference	---------- -	TP 0.2 0.5	TP03 0.2	TP19 0.3-0.4	TP41 0.1-0.2	TP42 0.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	[NA]	<25	<25
Benzene	mg/kg	<0.2	<0.2	[NA]	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	[NA]	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	[NA]	<1	<1
m+p-xylene	mg/kg	<2	<2	[NA]	<2	<2
o-Xylene	mg/kg	<1	<1	[NA]	<1	<1
naphthalene	mg/kg	<1	<1	[NA]	<1	<1
Surrogate aaa-Trifluorotoluene	%	93	84	88	94	88

vTRH(C6-C10)/BTEXN in Soil					
Our Reference:	UNITS	146058-72	146058-74	146058-97	146058-98
Your Reference	---------- -	TP43 0.4-0.5	HA02 0.0-0.1	TS	TB
Date Sampled	----------	3-May-16	3-May-16	2-May-16	2-May-16
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	2/05/2016	2/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016
TRH C_6 - C_9	mg/kg	<25	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	[NA]	[NA]
Benzene	mg/kg	<0.2	<0.2	105%	<0.2
Toluene	mg/kg	<0.5	<0.5	105%	<0.5
Ethylbenzene	mg/kg	<1	<1	104%	<1
m+p-xylene	mg/kg	<2	<2	102%	<2
o-Xylene	mg/kg	<1	<1	102%	<1
naphthalene	mg/kg	<1	<1	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%	86	87	108	90

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	146058-1	146058-3	146058-5	146058-7	146058-9
Your Reference	---------- -	TP01 0.0-0.2	TP 0.2 0.5	TP03 0.2	TP04 0.2	TP05 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	120	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	180	<100	<100	100	120
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	[NA]	<50	<50	[NA]	[NA]
TRH>C$_{16}$-C$_{34}$	mg/kg	180	<100	<100	180	120
TRH>C$_{34}$-C$_{40}$	mg/kg	150	<100	<100	<100	<100
Surrogate o-Terphenyl	%	101	96	99	104	99

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	146058-14	146058-17	146058-20	146058-28	146058-41
Your Reference	---------- -	TP07 0.5-0.6	TP08 0.5-0.6	TP09 0.3-0.4	TP13 0.1-0.2	TP19 0.3-0.4
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	91	91	91	93	93

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	146058-45	146058-49	146058-51	146058-54	146058-61
Your Reference	---------- -	TP210.2-0.3	TP230.2-0.3	TP240.2-0.3	TP260.1-0.2	TP320.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	93	86	86	85	83

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	146058-63	146058-67	146058-70	146058-71	146058-72
Your Reference	---------- -	TP340.1-0.2	TP380.1-0.2	TP410.1-0.2	TP420.1-0.2	TP430.4-0.5
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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	[NA]	[NA]	<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
Surrogate o-Terphenyl	%	84	82	86	84	80

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	146058-74
Your Reference	---------- -	HA02 0.0-0.1
Date Sampled	----------	3-May-16
Type of sample		Soil
Date Sampled		3/05/2016
Date extracted	-	6/05/2016
Date analysed	-	07/05/2016
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
Surrogate o-Terphenyl	%	85

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample Date Sampled	UNITS ---------- - ---------- 	146058-1 TP01 0.0-0.2 3-May-16 Soil 3/05/2016	146058-3 TP 0.2 0.5 3-May-16 Soil 3/05/2016	146058-5 TP03 0.2 3-May-16 Soil 3/05/2016	146058-7 TP04 0.2 3-May-16 Soil 3/05/2016	146058-14 TP07 0.5-0.6 3-May-16 Soil 3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Naphthalene	mg/kg	<0.1	<0.1	1.6	0.4	<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	1.3	0.6	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	0.3	0.2	0.2	<0.1
Pyrene	mg/kg	0.3	0.3	0.2	0.3	<0.1
Benzo(a)anthracene	mg/kg	0.1	0.2	<0.1	0.1	<0.1
Chrysene	mg/kg	0.1	0.2	0.2	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.4	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	0.1	0.2	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	<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	0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	1.2	2.2	3.4	2.4	NIL (+)VE
Surrogate p-Terphenyl-d14	%	114	109	108	122	100

PAHs in Soil Our Reference: Your Reference	UNITS ---------- -	146058-17 TP08 0.5-0.6	146058-20 TP09 0.3-0.4	146058-41 TP19 0.3-0.4	146058-45 TP21 0.2-0.3	146058-49 TP23 0.2-0.3
Date Sampled Type of sample Date Sampled	----------	3-May-16 Soil 3/05/2016	3-May-16 Soil 3/05/2016	3-May-16 Soil 3/05/2016	3-May-16 Soil 3/05/2016	3-May-16 Soil 3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
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	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	111	112	106	116	113

PAHs in Soil Our Reference: Your Reference	UNITS ----------	146058-51 TP24 0.2-0.3	146058-53 TP25 0.2-0.3	146058-54 TP26 0.1-0.2	146058-61 TP32 0.1-0.2	146058-70 TP41 0.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
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	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	116	110	114	107	96

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample Date Sampled	UNITS ---------- - ---------- 	146058-71 TP42 0.1-0.2 3-May-16 Soil 3/05/2016	146058-72 TP43 0.4-0.5 3-May-16 Soil 3/05/2016
Date extracted	-	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016
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	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	108	108

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-1	146058-3	146058-5	146058-7	146058-9
Your Reference	---------- -	TP01 0.0-0.2	TP 0.2 0.5	TP03 0.2	TP04 0.2	TP05 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	97	115	97	91	92

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-11	146058-12	146058-14	146058-17	146058-22
Your Reference	----------	TP060.2-0.3	TP060.6-0.7	TP070.5-0.6	TP080.5-0.6	TP100.1-0.2
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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	0.2	<0.1
Dieldrin	mg/kg	0.2	<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
Surrogate TCMX	%	92	92	92	92	92

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-24	146058-26	146058-28	146058-30	146058-32
Your Reference	----------	TP110.2-0.3	TP120.1-0.2	TP130.1-0.2	TP140.3-0.4	TP150.1-0.2
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	91	90	91	91	91

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-34	146058-36	146058-38	146058-40	146058-43
Your Reference	----------	TP160.2-0.3	TP170.1-0.2	TP180.1-0.2	TP190.1-0.2	TP200.1-0.2
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	90	91	91	94	89

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-45	146058-47	146058-49	146058-51	146058-53
Your Reference	----------	TP210.2-0.3	TP220.2-0.3	TP230.2-0.3	TP240.2-0.3	TP250.2-0.3
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	91	90	92	90	93

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-54	146058-55	146058-57	146058-59	146058-61
Your Reference	----------	TP26 0.1-0.2	TP27 0.1-0.2	TP28 0.2-0.3	TP30 0.1-0.2	TP32 0.1-0.2
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	91	92	92	92	91

Organochlorine Pesticides in soil						
Our Reference:	UNITS	146058-62	146058-64	146058-65	146058-67	146058-71
Your Reference	----------	TP33 0.2-0.3	TP35 0.2-0.3	TP36 0.1-0.2	TP38 0.1-0.2	TP42 0.1-0.2
	-					
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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
Surrogate TCMX	%	91	100	90	91	93

Organochlorine Pesticides in soil					
Our Reference:	UNITS	146058-75	146058-78	146058-79	146058-95
Your Reference	---------- -	HA03 0.1-0.2	HA06 0.0-0.1	HA07 0.2-0.3	DUP1
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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	0.2	<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
Surrogate TCMX	%	89	90	88	90

Organophosphorus Pesticides Our Reference: Your Reference Date Sampled Type of sample Date Sampled	UNITS ---------- - ---------- 	146058-22 TP100.1-0.2 3-May-16 Soil 3/05/2016	146058-24 TP110.2-0.3 3-May-16 Soil 3/05/2016	146058-32 TP150.1-0.2 3-May-16 Soil 3/05/2016	146058-36 TP170.1-0.2 3-May-16 Soil 3/05/2016
Date extracted	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016
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	%	92	91	91	91

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-1	146058-3	146058-5	146058-7	146058-9
Your Reference	---------- -	TP01 0.0-0.2	TP 0.2 0.5	TP03 0.2	TP04 0.2	TP05 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	5	9	<4	<4	5
Cadmium	mg/kg	<0.4	0.6	<0.4	<0.4	<0.4
Chromium	mg/kg	30	24	6	39	11
Copper	mg/kg	41	29	22	48	42
Lead	mg/kg	23	55	23	30	35
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	33	15	14	39	12
Zinc	mg/kg	63	170	52	95	110

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-11	146058-12	146058-14	146058-15	146058-17
Your Reference	---------- -	TP06 0.2-0.3	TP06 0.6-0.7	TP07 0.5-0.6	TP07 0.8-0.9	TP08 0.5-0.6
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	<4	5	7	7	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	17	26	18	19
Copper	mg/kg	15	20	32	19	31
Lead	mg/kg	68	11	17	13	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	5	15	6	12
Zinc	mg/kg	31	20	38	26	44
Phosphorus	mg/kg	200	[NA]	[NA]	[NA]	[NA]

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-18	146058-20	146058-22	146058-24	146058-26
Your Reference	---------- -	TP080.8-0.9	TP090.3-0.4	TP100.1-0.2	TP110.2-0.3	TP120.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	6	4	11	8	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	81	14	21	21
Copper	mg/kg	24	29	18	41	35
Lead	mg/kg	13	22	18	20	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	61	6	10	11
Zinc	mg/kg	26	78	37	53	46

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-28	146058-30	146058-31	146058-32	146058-34
Your Reference	---------- -	TP130.1-0.2	TP140.3-0.4	TP140.9-1.0	TP150.1-0.2	TP160.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	7	7	5	7	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	18	12	19	21
Copper	mg/kg	28	29	50	28	29
Lead	mg/kg	17	16	19	16	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	10	10	9	9
Zinc	mg/kg	43	46	47	40	33

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-35	146058-36	146058-37	146058-38	146058-40
Your Reference	---------- -	TP160.7-0.8	TP170.1-0.2	TP170.5-0.6	TP180.1-0.2	TP190.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	6	8	7	7	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	25	22	15	17
Copper	mg/kg	24	32	25	25	34
Lead	mg/kg	11	18	14	10	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	10	11	7	13
Zinc	mg/kg	19	43	46	33	63
Phosphorus	mg/kg	[NA]	510	[NA]	260	870

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-41	146058-42	146058-43	146058-45	146058-47
Your Reference	---------- -	TP190.3-0.4	TP190.9-1.0	TP200.1-0.2	TP210.2-0.3	TP220.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	6	7	6	5	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	18	23	17	14
Copper	mg/kg	29	40	32	27	17
Lead	mg/kg	12	16	18	13	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	12	12	10	12
Zinc	mg/kg	47	71	50	44	42
Phosphorus	mg/kg	280	[NA]	[NA]	[NA]	[NA]

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-49	146058-50	146058-51	146058-52	146058-53
Your Reference	---------- -	TP230.2-0.3	TP230.5-0.6	TP240.2-0.3	TP240.7-0.8	TP250.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	5	6	14	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	21	23	13	16
Copper	mg/kg	25	31	26	38	20
Lead	mg/kg	12	13	15	15	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	12	21	16	15
Zinc	mg/kg	31	48	40	60	46

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-54	146058-55	146058-57	146058-58	146058-59
Your Reference	---------- -	TP260.1-0.2	TP270.1-0.2	TP280.2-0.3	TP290.1-0.2	TP300.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	5	8	6	5	10
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	19	22	21	18	22
Copper	mg/kg	21	14	22	20	20
Lead	mg/kg	14	100	22	16	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	8	11	10	7
Zinc	mg/kg	36	29	42	36	24

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-60	146058-61	146058-62	146058-63	146058-64
Your Reference	---------- -	TP31 0.3-0.4	TP32 0.1-0.2	TP33 0.2-0.3	TP34 0.1-0.2	TP35 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	6	8	8	6	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	19	26	21	24
Copper	mg/kg	23	21	10	14	15
Lead	mg/kg	15	14	17	17	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	8	6	9	8
Zinc	mg/kg	36	24	14	23	19

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-65	146058-66	146058-67	146058-68	146058-69
Your Reference	---------- -	TP36 0.1-0.2	TP37 0.2-0.3	TP38 0.1-0.2	TP39 0.3-0.4	TP40 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	7	5	6	7	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	21	19	22	22
Copper	mg/kg	10	15	27	19	19
Lead	mg/kg	14	16	13	14	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	8	10	7	7	8
Zinc	mg/kg	17	30	27	25	23
Phosphorus	mg/kg	200	[NA]	[NA]	[NA]	[NA]

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-70	146058-71	146058-72	146058-73	146058-74
Your Reference	---------- -	TP41 0.1-0.2	TP42 0.1-0.2	TP43 0.4-0.5	HA01 0.1-0.2	HA02 0.0-0.1
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	<4	<4	<4	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	19	18	24	17
Copper	mg/kg	38	21	26	52	26
Lead	mg/kg	19	21	16	57	26
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	14	7	22	8
Zinc	mg/kg	55	45	31	110	80

Acid Extractable metals in soil						
Our Reference:	UNITS	146058-75	146058-76	146058-77	146058-78	146058-79
Your Reference	---------- -	HA03 0.1-0.2	HA04 0.0-0.4	HA05 0.1-0.2	HA06 0.0-0.1	HA07 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	5	[NA]	7	[NA]	8
Cadmium	mg/kg	<0.4	[NA]	<0.4	[NA]	<0.4
Chromium	mg/kg	15	[NA]	16	[NA]	24
Copper	mg/kg	29	[NA]	29	[NA]	38
Lead	mg/kg	19	[NA]	16	[NA]	40
Mercury	mg/kg	<0.1	[NA]	<0.1	[NA]	<0.1
Nickel	mg/kg	9	[NA]	10	[NA]	16
Zinc	mg/kg	46	[NA]	60	[NA]	120
Phosphorus	mg/kg	350	430	1,100	630	520

Acid Extractable metals in soil				
Our Reference:	UNITS	146058-95	146058-96	146058-99
Your Reference	---------- -	DUP1	DUP2 (A)	TP 0.2 0.5 - TRIPLICATE
Date Sampled	----------	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016
Date prepared	-	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016
Arsenic	mg/kg	6	6	<4
Cadmium	mg/kg	<0.4	<0.4	0.6
Chromium	mg/kg	19	15	17
Copper	mg/kg	17	35	39
Lead	mg/kg	12	15	41
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	6	18	17
Zinc	mg/kg	22	66	130

Moisture						
Our Reference:	UNITS	146058-1	146058-3	146058-5	146058-7	146058-9
Your Reference	---------- -	TP01 0.0-0.2	TP 0.2 0.5	TP03 0.2	TP04 0.2	TP05 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	6.3	16	4.1	6.4	8.7

Moisture						
Our Reference:	UNITS	146058-11	146058-12	146058-14	146058-15	146058-17
Your Reference	---------- -	TP06 0.2-0.3	TP06 0.6-0.7	TP07 0.5-0.6	TP07 0.8-0.9	TP08 0.5-0.6
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	7.5	24	21	20	12

Moisture						
Our Reference:	UNITS	146058-18	146058-20	146058-22	146058-24	146058-26
Your Reference	---------- -	TP08 0.8-0.9	TP09 0.3-0.4	TP10 0.1-0.2	TP11 0.2-0.3	TP12 0.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	16	13	13	12	12

Moisture						
Our Reference:	UNITS	146058-28	146058-30	146058-31	146058-32	146058-34
Your Reference	---------- -	TP13 0.1-0.2	TP14 0.3-0.4	TP14 0.9-1.0	TP15 0.1-0.2	TP16 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	13	12	14	12	13

Moisture						
Our Reference:	UNITS	146058-35	146058-36	146058-37	146058-38	146058-40
Your Reference	---------- -	TP160.7-0.8	TP170.1-0.2	TP170.5-0.6	TP180.1-0.2	TP190.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	16	12	21	11	9.7

Moisture						
Our Reference:	UNITS	146058-41	146058-42	146058-43	146058-45	146058-47
Your Reference	---------- -	TP190.3-0.4	TP190.9-1.0	TP200.1-0.2	TP210.2-0.3	TP220.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	17	20	16	16	13

Moisture						
Our Reference:	UNITS	146058-49	146058-50	146058-51	146058-52	146058-53
Your Reference	---------- -	TP230.2-0.3	TP230.5-0.6	TP240.2-0.3	TP240.7-0.8	TP250.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	12	19	12	18	17

Moisture						
Our Reference:	UNITS	146058-54	146058-55	146058-57	146058-58	146058-59
Your Reference	---------- -	TP260.1-0.2	TP270.1-0.2	TP280.2-0.3	TP290.1-0.2	TP300.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	13	7.7	11	12	13

Moisture						
Our Reference:	UNITS	146058-60	146058-61	146058-62	146058-63	146058-64
Your Reference	---------- -	TP31 0.3-0.4	TP32 0.1-0.2	TP33 0.2-0.3	TP34 0.1-0.2	TP35 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	17	21	8.1	12	17

Moisture						
Our Reference:	UNITS	146058-65	146058-66	146058-67	146058-68	146058-69
Your Reference	---------- -	TP36 0.1-0.2	TP37 0.2-0.3	TP38 0.1-0.2	TP39 0.3-0.4	TP40 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	9.8	10	12	14	17

Moisture						
Our Reference:	UNITS	146058-70	146058-71	146058-72	146058-73	146058-74
Your Reference	---------- -	TP41 0.1-0.2	TP42 0.1-0.2	TP43 0.4-0.5	HA01 0.1-0.2	HA02 0.0-0.1
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	8.5	13	17	13	11

Moisture						
Our Reference:	UNITS	146058-75	146058-76	146058-77	146058-78	146058-79
Your Reference	---------- -	HA03 0.1-0.2	HA04 0.0-0.4	HA05 0.1-0.2	HA06 0.0-0.1	HA07 0.2-0.3
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016	9/05/2016	9/05/2016
Moisture	%	13	14	16	17	19

Moisture Our Reference: Your Reference	UNITS ---------- -	146058-95 DUP1	146058-96 DUP2 (A)	146058-98 TB
Date Sampled	----------	3-May-16	3-May-16	2-May-16
Type of sample		Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	2/05/2016
Date prepared	-	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	9/05/2016	9/05/2016	9/05/2016
Moisture	%	20	15	0.2

Misc Soil - Inorg				
Our Reference:	UNITS	146058-3	146058-5	146058-7
Your Reference	---------- -	TP 0.2 0.5	TP03 0.2	TP04 0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016
Date prepared	-	09/05/2016	06/05/2016	06/05/2016
Date analysed	-	09/05/2016	06/05/2016	06/05/2016
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Misc Inorg - Soil						
Our Reference:	UNITS	146058-11	146058-36	146058-38	146058-40	146058-41
Your Reference	---------- -	TP06 0.2-0.3	TP17 0.1-0.2	TP18 0.1-0.2	TP19 0.1-0.2	TP19 0.3-0.4
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	10/05/2016	10/05/2016	10/05/2016	10/05/2016	10/05/2016
Date analysed	-	10/05/2016	10/05/2016	10/05/2016	10/05/2016	10/05/2016
Total Nitrogen in soil	mg/kg	630	830	710	2,000	450

Misc Inorg - Soil						
Our Reference:	UNITS	146058-65	146058-75	146058-76	146058-77	146058-78
Your Reference	---------- -	TP36 0.1-0.2	HA03 0.1-0.2	HA04 0.0-0.4	HA05 0.1-0.2	HA06 0.0-0.1
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date prepared	-	10/05/2016	10/05/2016	10/05/2016	10/05/2016	10/05/2016
Date analysed	-	10/05/2016	10/05/2016	10/05/2016	10/05/2016	10/05/2016
Total Nitrogen in soil	mg/kg	900	2,900	3,300	2,900	4,800

Misc Inorg - Soil		
Our Reference:	UNITS	146058-79
Your Reference	---------- -	HA07 0.2-0.3
Date Sampled	----------	3-May-16
Type of sample		Soil
Date Sampled		3/05/2016
Date prepared	-	10/05/2016
Date analysed	-	10/05/2016
Total Nitrogen in soil	mg/kg	1,900

Microbiologocal Testing						
Our Reference:	UNITS	146058-11	146058-36	146058-40	146058-65	146058-75
Your Reference	---------- -	TP06 0.2-0.3	TP17 0.1-0.2	TP19 0.1-0.2	TP36 0.1-0.2	HA03 0.1-0.2
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date of testing	-	07/05/2016	07/05/2016	07/05/2016	07/05/2016	07/05/2016
Total Coliforms	mpn/100g	1,700	9,400	500	<200	1,700

Microbiologocal Testing				
Our Reference:	UNITS	146058-76	146058-77	146058-78
Your Reference	---------- -	HA04 0.0-0.4	HA05 0.1-0.2	HA06 0.0-0.1
Date Sampled	----------	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016
Date of testing	-	07/05/2016	07/05/2016	07/05/2016
Total Coliforms	mpn/100g	3,300	3,300	4,900

Asbestos ID - soils NEPM - ASB-001						
Our Reference:	UNITS	146058-81	146058-82	146058-83	146058-84	146058-85
Your Reference	---------- -	TP01	TP02	TP05	PT06	TP07
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date analysed	-	11/05/2016	11/05/2016	11/05/2016	11/05/2016	11/05/2016
Sample mass tested	g	1118.01	1134.77	1059.29	1038.4	1294.8
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown clayey-soil
Asbestos ID in soil (as per AS4964)	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	12.7816	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
ACM >7mm Estimation*	g	0.0000	14.3520	0.0000	0.0000	0.0000
FA and AF Estimation*	g	0.0000	0.1522	0.0000	0.0000	0.0000
ACM>7mm Estimation*	%(w/w)	<0.01	1.2647	<0.01	<0.01	<0.01
FA and AF Estimation*[#2]	%(w/w)	<0.001	0.0134	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference:	UNITS	146058-86	146058-87	146058-88	146058-89	146058-90
Your Reference	---------- -	TP08	TP11	TP17	TP19	TP24
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date analysed	-	11/05/2016	11/05/2016	11/05/2016	11/05/2016	11/05/2016
Sample mass tested	g	1293.52	1112.28	959.75	1261.14	1064.04
Sample Description	-	Grey coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown clayey-soil	Brown coarse-grained soil & rocks
Asbestos ID in soil (as per AS4964)	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
ACM >7mm Estimation*	g	0.0000	0.0000	0.0000	0.0000	0.0000
FA and AF Estimation*	g	0.0000	0.0000	0.0000	0.0000	0.0000
ACM>7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*[#2]	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001					
Our Reference:	UNITS	146058-91	146058-92	146058-93	146058-94
Your Reference	---------- -	TP40	TP41	TP42	TP43
Date Sampled	----------	3-May-16	3-May-16	3-May-16	3-May-16
Type of sample		Soil	Soil	Soil	Soil
Date Sampled		3/05/2016	3/05/2016	3/05/2016	3/05/2016
Date analysed	-	11/05/2016	11/05/2016	11/05/2016	11/05/2016
Sample mass tested	g	808.03	1090.313	749.72	877.01
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (as per AS4964)	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Not applicable	Not applicable	Not applicable	Not applicable
ACM >7mm Estimation*	g	0.0000	0.0000	0.0000	0.0000
FA and AF Estimation*	g	0.0000	0.0000	0.0000	0.0000
ACM>7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*[#2]	%(w/w)	<0.001	<0.001	<0.001	<0.001

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-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. 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. For soil results:- 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. 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. 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. 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-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.

Method ID	Methodology Summary
	Estimation = Estimated asbestos weight 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 vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Date analysed	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	146058-3	<25 || <25	LCS-9	89%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	146058-3	<25 || <25	LCS-9	89%
Benzene	mg/kg	0.2	Org-016	<0.2	146058-3	<0.2 || <0.2	LCS-9	83%
Toluene	mg/kg	0.5	Org-016	<0.5	146058-3	<0.5 || <0.5	LCS-9	81%
Ethylbenzene	mg/kg	1	Org-016	<1	146058-3	<1 || <1	LCS-9	91%
m+p-xylene	mg/kg	2	Org-016	<2	146058-3	<2 || <2	LCS-9	95%
o-Xylene	mg/kg	1	Org-016	<1	146058-3	<1 || <1	LCS-9	89%
naphthalene	mg/kg	1	Org-014	<1	146058-3	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	93	146058-3	93 || 82 || RPD: 13	LCS-9	90%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	146058-3	6/05/2016 || 6/05/2016	LCS-9	06/05/2016
Date analysed	-			07/05/2016	146058-3	07/05/2016 || 07/05/2016	LCS-9	09/05/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	146058-3	<50 || <50	LCS-9	104%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	146058-3	<100 || <100	LCS-9	94%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	146058-3	<100 || <100	LCS-9	123%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	146058-3	<50 || <50	LCS-9	104%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	146058-3	<100 || <100	LCS-9	94%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	146058-3	<100 || <100	LCS-9	123%
Surrogate o-Terphenyl	%		Org-003	91	146058-3	96 || 101 || RPD: 5	LCS-9	101%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Date analysed	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Naphthalene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	LCS-9	99%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	LCS-9	92%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	146058-3	0.1 || 0.2 || RPD: 67	LCS-9	109%
Anthracene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	146058-3	0.3 || 0.5 || RPD: 50	LCS-9	101%
Pyrene	mg/kg	0.1	Org-012	<0.1	146058-3	0.3 || 0.6 || RPD: 67	LCS-9	103%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	146058-3	0.2 || 0.3 || RPD: 40	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	146058-3	0.2 || 0.3 || RPD: 40	LCS-9	72%
Benzo(b,j +k)fluoranthene	mg/kg	0.2	Org-012	<0.2	146058-3	0.4 || 0.7 || RPD: 55	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	146058-3	0.2 || 0.4 || RPD: 67	LCS-9	106%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	146058-3	0.2 || 0.3 || RPD: 40	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	146058-3	0.2 || 0.2 || RPD: 0	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	106	146058-3	109 || 111 || RPD: 2	LCS-9	135%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Date analysed	-			07/05/2016	146058-3	07/05/2016 || 07/05/2016	LCS-9	07/05/2016
HCB	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	72%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	89%
Heptachlor	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	91%
delta-BHC	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	104%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	91%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	88%
Dieldrin	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	95%
Endrin	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	108%
pp-DDD	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	84%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	LCS-9	83%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	146058-3	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	90	146058-3	115 || 121 || RPD: 5	LCS-9	102%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	[NT]	[NT]	LCS-9	06/05/2016
Date analysed	-			07/05/2016	[NT]	[NT]	LCS-9	07/05/2016
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	80%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	107%
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	81%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	98%
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	89%
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	84%
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-9	86%
Surrogate TCMX	%		Org-008	90	[NT]	[NT]	LCS-9	89%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Date analysed	-			06/05/2016	146058-3	06/05/2016 || 06/05/2016	LCS-9	06/05/2016
Arsenic	mg/kg	4	Metals-020	<4	146058-3	9 || 6 || RPD: 40	LCS-9	112%
Cadmium	mg/kg	0.4	Metals-020	<0.4	146058-3	0.6 || 0.7 || RPD: 15	LCS-9	102%
Chromium	mg/kg	1	Metals-020	<1	146058-3	24 || 18 || RPD: 29	LCS-9	108%
Copper	mg/kg	1	Metals-020	<1	146058-3	29 || 40 || RPD: 32	LCS-9	110%
Lead	mg/kg	1	Metals-020	<1	146058-3	55 || 63 || RPD: 14	LCS-9	103%
Mercury	mg/kg	0.1	Metals-021	<0.1	146058-3	<0.1 || <0.1	LCS-9	93%
Nickel	mg/kg	1	Metals-020	<1	146058-3	15 || 28 || RPD: 60	LCS-9	101%
Zinc	mg/kg	1	Metals-020	<1	146058-3	170 || 180 || RPD: 6	LCS-9	102%
Phosphorus	mg/kg	10	Metals-020	<10	[NT]	[NT]	LCS-9	100%

QUALITY CONTROL Misc Soil - Inorg	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			06/05/2016	[NT]	[NT]	LCS-1	06/05/2016
Date analysed	-			06/05/2016	[NT]	[NT]	LCS-1	06/05/2016
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	LCS-1	104%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			10/05/2016	146058-11	10/05/2016 || 10/05/2016	LCS-1	10/05/2016
Date analysed	-			10/05/2016	146058-11	10/05/2016 || 10/05/2016	LCS-1	10/05/2016
Total Nitrogen in soil	mg/kg	10	Inorg-055/062	<10	146058-11	630 || 570 || RPD: 10	LCS-1	85%

QUALITY CONTROL Microbiologocal Testing	UNITS	PQL	METHOD	Blank
Date of testing	-			[NT]

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-14	06/06/2016
Date analysed	-	[NT]	[NT]	LCS-14	06/05/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	[NT]	[NT]	LCS-14	108%
TRHC$_{15}$ - C$_{28}$	mg/kg	[NT]	[NT]	LCS-14	111%
TRHC$_{29}$ - C$_{36}$	mg/kg	[NT]	[NT]	LCS-14	108%
TRH>C$_{10}$-C$_{16}$	mg/kg	[NT]	[NT]	LCS-14	108%
TRH>C$_{16}$-C$_{34}$	mg/kg	[NT]	[NT]	LCS-14	111%
TRH>C$_{34}$-C$_{40}$	mg/kg	[NT]	[NT]	LCS-14	108%
Surrogate o-Terphenyl	%	[NT]	[NT]	LCS-14	94%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	146058-22	06/05/2016 || 06/05/2016	LCS-10	06/05/2016
Date analysed	-	146058-22	07/05/2016 || 07/05/2016	LCS-10	07/05/2016
HCB	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	146058-22	<0.1 || <0.1	LCS-10	73%
gamma-BHC	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	146058-22	<0.1 || <0.1	LCS-10	91%
Heptachlor	mg/kg	146058-22	<0.1 || <0.1	LCS-10	91%
delta-BHC	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	146058-22	<0.1 || <0.1	LCS-10	106%
Heptachlor Epoxide	mg/kg	146058-22	<0.1 || <0.1	LCS-10	93%
gamma-Chlordane	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Endosulfan I	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	146058-22	<0.1 || <0.1	LCS-10	90%
Dieldrin	mg/kg	146058-22	<0.1 || <0.1	LCS-10	96%
Endrin	mg/kg	146058-22	<0.1 || <0.1	LCS-10	108%
pp-DDD	mg/kg	146058-22	<0.1 || <0.1	LCS-10	85%
Endosulfan II	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	146058-22	<0.1 || <0.1	LCS-10	82%
Methoxychlor	mg/kg	146058-22	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	146058-22	92 || 91 || RPD: 1	LCS-10	105%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	146058-22	06/05/2016 || 06/05/2016
Date analysed	-	146058-22	07/05/2016 || 07/05/2016
Azinphos-methyl (Guthion)	mg/kg	146058-22	<0.1 || <0.1
Bromophos-ethyl	mg/kg	146058-22	<0.1 || <0.1
Chlorpyriphos	mg/kg	146058-22	<0.1 || <0.1
Chlorpyriphos-methyl	mg/kg	146058-22	<0.1 || <0.1
Diazinon	mg/kg	146058-22	<0.1 || <0.1
Dichlorvos	mg/kg	146058-22	<0.1 || <0.1
Dimethoate	mg/kg	146058-22	<0.1 || <0.1
Ethion	mg/kg	146058-22	<0.1 || <0.1
Fenitrothion	mg/kg	146058-22	<0.1 || <0.1
Malathion	mg/kg	146058-22	<0.1 || <0.1
Parathion	mg/kg	146058-22	<0.1 || <0.1
Ronnel	mg/kg	146058-22	<0.1 || <0.1
Surrogate TCMX	%	146058-22	92 || 91 || RPD: 1

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146058-22	06/05/2016 || 06/05/2016	LCS-10	06/05/2016
Date analysed	-	146058-22	06/05/2016 || 06/05/2016	LCS-10	06/05/2016
Arsenic	mg/kg	146058-22	11 || 13 || RPD: 17	LCS-10	108%
Cadmium	mg/kg	146058-22	<0.4 || <0.4	LCS-10	99%
Chromium	mg/kg	146058-22	14 || 16 || RPD: 13	LCS-10	104%
Copper	mg/kg	146058-22	18 || 21 || RPD: 15	LCS-10	109%
Lead	mg/kg	146058-22	18 || 21 || RPD: 15	LCS-10	101%
Mercury	mg/kg	146058-22	<0.1 || <0.1	LCS-10	89%
Nickel	mg/kg	146058-22	6 || 7 || RPD: 15	LCS-10	99%
Zinc	mg/kg	146058-22	37 || 46 || RPD: 22	LCS-10	99%
Phosphorus	mg/kg	[NT]	[NT]	LCS-10	97%

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	146058-79	10/05/2016 || 10/05/2016
Date analysed	-	146058-79	10/05/2016 || 10/05/2016
Total Nitrogen in soil	mg/kg	146058-79	1900 || 2000 || RPD: 5

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	146058-49	6/05/2016 || 6/05/2016
Date analysed	-	146058-49	07/05/2016 || 07/05/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	146058-49	<50 || <50
TRHC$_{15}$ - C$_{28}$	mg/kg	146058-49	<100 || <100
TRHC$_{29}$ - C$_{36}$	mg/kg	146058-49	<100 || <100
TRH>C$_{10}$-C$_{16}$	mg/kg	146058-49	<50 || <50
TRH>C$_{16}$-C$_{34}$	mg/kg	146058-49	<100 || <100
TRH>C$_{34}$-C$_{40}$	mg/kg	146058-49	<100 || <100
Surrogate o-Terphenyl	%	146058-49	86 || 87 || RPD: 1

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	146058-49	06/05/2016 || 06/05/2016
Date analysed	-	146058-49	06/05/2016 || 06/05/2016
Naphthalene	mg/kg	146058-49	<0.1 || <0.1
Acenaphthylene	mg/kg	146058-49	<0.1 || <0.1
Acenaphthene	mg/kg	146058-49	<0.1 || <0.1
Fluorene	mg/kg	146058-49	<0.1 || <0.1
Phenanthrene	mg/kg	146058-49	<0.1 || <0.1
Anthracene	mg/kg	146058-49	<0.1 || <0.1
Fluoranthene	mg/kg	146058-49	<0.1 || <0.1
Pyrene	mg/kg	146058-49	<0.1 || <0.1
Benzo(a)anthracene	mg/kg	146058-49	<0.1 || <0.1
Chrysene	mg/kg	146058-49	<0.1 || <0.1

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Benzo(b,j+k)fluoranthene	mg/kg	146058-49	<0.2 || <0.2
Benzo(a)pyrene	mg/kg	146058-49	<0.05 || <0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	146058-49	<0.1 || <0.1
Dibenzo(a,h)anthracene	mg/kg	146058-49	<0.1 || <0.1
Benzo(g,h,i)perylene	mg/kg	146058-49	<0.1 || <0.1
Surrogate p-Terphenyl-d14	%	146058-49	113 || 118 || RPD: 4
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	146058-49	06/05/2016 || 06/05/2016
Date analysed	-	146058-49	07/05/2016 || 07/05/2016
HCB	mg/kg	146058-49	<0.1 || <0.1
alpha-BHC	mg/kg	146058-49	<0.1 || <0.1
gamma-BHC	mg/kg	146058-49	<0.1 || <0.1
beta-BHC	mg/kg	146058-49	<0.1 || <0.1
Heptachlor	mg/kg	146058-49	<0.1 || <0.1
delta-BHC	mg/kg	146058-49	<0.1 || <0.1
Aldrin	mg/kg	146058-49	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	146058-49	<0.1 || <0.1
gamma-Chlordane	mg/kg	146058-49	<0.1 || <0.1
alpha-chlordane	mg/kg	146058-49	<0.1 || <0.1
Endosulfan I	mg/kg	146058-49	<0.1 || <0.1
pp-DDE	mg/kg	146058-49	<0.1 || <0.1
Dieldrin	mg/kg	146058-49	<0.1 || <0.1
Endrin	mg/kg	146058-49	<0.1 || <0.1
pp-DDD	mg/kg	146058-49	<0.1 || <0.1
Endosulfan II	mg/kg	146058-49	<0.1 || <0.1
pp-DDT	mg/kg	146058-49	<0.1 || <0.1
Endrin Aldehyde	mg/kg	146058-49	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	146058-49	<0.1 || <0.1
Methoxychlor	mg/kg	146058-49	<0.1 || <0.1
Surrogate TCMX	%	146058-49	92 || 92 || RPD: 0

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146058-49	06/05/2016 || 06/05/2016	LCS-11	06/05/2016
Date analysed	-	146058-49	06/05/2016 || 06/05/2016	LCS-11	06/05/2016
Arsenic	mg/kg	146058-49	5 || 5 || RPD: 0	LCS-11	109%
Cadmium	mg/kg	146058-49	<0.4 || <0.4	LCS-11	99%
Chromium	mg/kg	146058-49	18 || 18 || RPD: 0	LCS-11	106%
Copper	mg/kg	146058-49	25 || 26 || RPD: 4	LCS-11	111%
Lead	mg/kg	146058-49	12 || 11 || RPD: 9	LCS-11	102%
Mercury	mg/kg	146058-49	<0.1 || <0.1	LCS-11	96%
Nickel	mg/kg	146058-49	9 || 9 || RPD: 0	LCS-11	100%
Zinc	mg/kg	146058-49	31 || 32 || RPD: 3	LCS-11	100%
Phosphorus	mg/kg	[NT]	[NT]	LCS-11	95%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146058-5	06/05/2016
Date analysed	-	[NT]	[NT]	146058-5	06/05/2016
TRH C_6 - C_9	mg/kg	[NT]	[NT]	146058-5	97%
TRH C_6 - C_{10}	mg/kg	[NT]	[NT]	146058-5	97%
Benzene	mg/kg	[NT]	[NT]	146058-5	92%
Toluene	mg/kg	[NT]	[NT]	146058-5	89%
Ethylbenzene	mg/kg	[NT]	[NT]	146058-5	99%
m+p-xylene	mg/kg	[NT]	[NT]	146058-5	103%
o-Xylene	mg/kg	[NT]	[NT]	146058-5	97%
naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	146058-5	92%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146058-5	6/05/2016
Date analysed	-	[NT]	[NT]	146058-5	07/05/2016
TRH C_{10} - C_{14}	mg/kg	[NT]	[NT]	146058-5	120%
TRH C_{15} - C_{28}	mg/kg	[NT]	[NT]	146058-5	115%
TRH C_{29} - C_{36}	mg/kg	[NT]	[NT]	146058-5	112%
TRH >C_{10}-C_{16}	mg/kg	[NT]	[NT]	146058-5	120%
TRH >C_{16}-C_{34}	mg/kg	[NT]	[NT]	146058-5	115%
TRH >C_{34}-C_{40}	mg/kg	[NT]	[NT]	146058-5	112%
Surrogate o-Terphenyl	%	[NT]	[NT]	146058-5	99%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146058-5	06/05/2016
Date analysed	-	[NT]	[NT]	146058-5	06/05/2016
Naphthalene	mg/kg	[NT]	[NT]	146058-5	84%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	146058-5	99%
Phenanthrene	mg/kg	[NT]	[NT]	146058-5	109%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	146058-5	89%
Pyrene	mg/kg	[NT]	[NT]	146058-5	110%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	146058-5	68%
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	146058-5	85%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	146058-5	128%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146058-5	06/05/2016
Date analysed	-	[NT]	[NT]	146058-5	07/05/2016
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	146058-5	91%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	146058-5	93%
Heptachlor	mg/kg	[NT]	[NT]	146058-5	94%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	146058-5	107%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	146058-5	95%
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]	146058-5	92%
Dieldrin	mg/kg	[NT]	[NT]	146058-5	99%
Endrin	mg/kg	[NT]	[NT]	146058-5	113%
pp-DDD	mg/kg	[NT]	[NT]	146058-5	89%
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]	146058-5	93%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	146058-5	108%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146058-58	06/05/2016 || 06/05/2016	146058-5	06/05/2016
Date analysed	-	146058-58	06/05/2016 || 06/05/2016	146058-5	06/05/2016
Arsenic	mg/kg	146058-58	5 || 5 || RPD: 0	146058-5	95%
Cadmium	mg/kg	146058-58	<0.4 || <0.4	146058-5	95%
Chromium	mg/kg	146058-58	18 || 18 || RPD: 0	146058-5	94%
Copper	mg/kg	146058-58	20 || 21 || RPD: 5	146058-5	107%
Lead	mg/kg	146058-58	16 || 17 || RPD: 6	146058-5	97%
Mercury	mg/kg	146058-58	<0.1 || <0.1	146058-5	85%
Nickel	mg/kg	146058-58	10 || 12 || RPD: 18	146058-5	89%
Zinc	mg/kg	146058-58	36 || 43 || RPD: 18	146058-5	82%
Phosphorus	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	146058-65	06/05/2016 || 06/05/2016	146058-24	06/05/2016
Date analysed	-	146058-65	07/05/2016 || 07/05/2016	146058-24	07/05/2016
HCB	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	146058-65	<0.1 || <0.1	146058-24	96%
gamma-BHC	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	146058-65	<0.1 || <0.1	146058-24	101%
Heptachlor	mg/kg	146058-65	<0.1 || <0.1	146058-24	94%
delta-BHC	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	146058-65	<0.1 || <0.1	146058-24	111%
Heptachlor Epoxide	mg/kg	146058-65	<0.1 || <0.1	146058-24	117%
gamma-Chlordane	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	146058-65	<0.1 || <0.1	146058-24	97%
Dieldrin	mg/kg	146058-65	<0.1 || <0.1	146058-24	103%
Endrin	mg/kg	146058-65	<0.1 || <0.1	146058-24	116%
pp-DDD	mg/kg	146058-65	<0.1 || <0.1	146058-24	90%
Endosulfan II	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	146058-65	<0.1 || <0.1	146058-24	94%
Methoxychlor	mg/kg	146058-65	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	146058-65	90 || 90 || RPD: 0	146058-24	92%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146058-24	06/05/2016
Date analysed	-	[NT]	[NT]	146058-24	07/05/2016
Azinphos-methyl (Guthion)	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	146058-24	82%
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	[NT]	[NT]	146058-24	94%
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	146058-24	75%
Fenitrothion	mg/kg	[NT]	[NT]	146058-24	98%
Malathion	mg/kg	[NT]	[NT]	146058-24	84%
Parathion	mg/kg	[NT]	[NT]	146058-24	82%
Ronnel	mg/kg	[NT]	[NT]	146058-24	87%
Surrogate TCMX	%	[NT]	[NT]	146058-24	90%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146058-65	06/05/2016 || 06/05/2016	146058-24	06/05/2016
Date analysed	-	146058-65	06/05/2016 || 06/05/2016	146058-24	06/05/2016
Arsenic	mg/kg	146058-65	7 || 7 || RPD: 0	146058-24	86%
Cadmium	mg/kg	146058-65	<0.4 || <0.4	146058-24	81%
Chromium	mg/kg	146058-65	20 || 20 || RPD: 0	146058-24	86%
Copper	mg/kg	146058-65	10 || 11 || RPD: 10	146058-24	93%
Lead	mg/kg	146058-65	14 || 14 || RPD: 0	146058-24	79%
Mercury	mg/kg	146058-65	<0.1 || <0.1	146058-24	85%
Nickel	mg/kg	146058-65	8 || 8 || RPD: 0	146058-24	82%
Zinc	mg/kg	146058-65	17 || 21 || RPD: 21	146058-24	76%
Phosphorus	mg/kg	146058-65	200 || 240 || RPD: 18	[NR]	[NR]

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146058-76	06/05/2016 || 06/05/2016	146058-50	06/05/2016
Date analysed	-	146058-76	06/05/2016 || 06/05/2016	146058-50	06/05/2016
Arsenic	mg/kg	[NT]	[NT]	146058-50	84%
Cadmium	mg/kg	[NT]	[NT]	146058-50	82%
Chromium	mg/kg	[NT]	[NT]	146058-50	91%
Copper	mg/kg	[NT]	[NT]	146058-50	100%
Lead	mg/kg	[NT]	[NT]	146058-50	79%
Mercury	mg/kg	[NT]	[NT]	146058-50	86%
Nickel	mg/kg	[NT]	[NT]	146058-50	82%
Zinc	mg/kg	[NT]	[NT]	146058-50	83%
Phosphorus	mg/kg	146058-76	430 || 410 || RPD: 5	[NR]	[NR]

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	146058-77	06/05/2016
Date analysed	-	[NT]	[NT]	146058-77	06/05/2016
Arsenic	mg/kg	[NT]	[NT]	146058-77	87%
Cadmium	mg/kg	[NT]	[NT]	146058-77	80%
Chromium	mg/kg	[NT]	[NT]	146058-77	94%
Copper	mg/kg	[NT]	[NT]	146058-77	102%
Lead	mg/kg	[NT]	[NT]	146058-77	83%
Mercury	mg/kg	[NT]	[NT]	146058-77	83%
Nickel	mg/kg	[NT]	[NT]	146058-77	86%
Zinc	mg/kg	[NT]	[NT]	146058-77	93%
Phosphorus	mg/kg	[NT]	[NT]	146058-77	#

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 146058-3 for Ni. Therefore a triplicate result has been issued as laboratory sample number 146058-99.

METALS_S: # 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 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.

Micro analysed by Sonic, report no W1607895.

Asbestos ID was analysed by Approved Identifier: Paul Ching
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.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental
Project Mgr:	Silja Kuerzinger
Sampler:	SK / OC
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000
Email:	silja.kuerziniger@zoic.com.au
Phone:	9231 1045 **Mobile:** 0488991718

Client Project Name and Number:	DSI FABH WSPT
PO No.:	16035
Envirolab Services Quote No. :	
Date results required:	11-May-16
Or choose:	standard

Note: Inform lab in advance if urgent turnaround is required - surcharge applies

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample			metals (8)	TRH C6-C9	TRH C10-36	BTEX		MAH	Halogenated hydrocarbons	Solvents	CaCO3	OCP	Nitrogen / phosphorous			Provide as much information about the sample as you can
1	MW2	3-May-16	amber/plastic/vial			x	x	x	x		x	x	x						Please filter all samples for metals
2	MW9	3-May-16	amber/plastic/vial				x	x	x										
3	MW24	3-May-16	amber/plastic/vial			x	x	x	x		x	x	x						
4	MW25	3-May-16	amber/plastic/vial			x	x	x	x		x	x	x	x					
5	DAM1	3-May-16	amber/plastic			x									x	x			
6	DAM2	3-May-16	amber/plastic			x									x	x			
7	DUP1	3-May-16	amber/plastic/vial			x	x	x	x										
8	DUP2	3-May-16	amber/plastic/vial																
9	TB	2-May-16	vial				x		x										
10	TS	2-May-16	vial				x		x										

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

146064.
Date Received 04/05/2016
Time Received 1745.
Received by CB
Cool/Ambient
Ice/Icepack
Intact/Broken/None

Relinquished by (company):	Zoic	**Received by (company):**	
Print Name:	Silja Kuerzinger	**Print Name:**	Calum BONSER.
Date & Time:	5-May-16	**Date & Time:**	4/5 1745.
Signature:		**Signature:**	CB.

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: 5-7 (if applicable)
Transported by: Hand delivered / courier

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 146064

Client:
Zoic Environmental
Suite 4, Level 3, 105 Pitt St
Sydney
NSW 2000

Attention: Silja Kuerzinger

Sample log in details:

Your Reference:	**DSI FABH WSPT**		
No. of samples:	10 waters		
Date samples received / completed instructions received	04/05/16	/	04/05/16

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:	11/05/16	/	11/05/16
Date of Preliminary Report:	Not Issued		

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	146064-1 MW2 3/05/2016 water	146064-3 MW24 3/05/2016 water	146064-4 MW25 3/05/2016 water
Date extracted	-	05/05/2016	05/05/2016	05/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016
Dichlorodifluoromethane	µg/L	<100	<10	<10
Chloromethane	µg/L	<100	<10	<10
Vinyl Chloride	µg/L	<100	<10	<10
Bromomethane	µg/L	<100	<10	<10
Chloroethane	µg/L	<100	<10	<10
Trichlorofluoromethane	µg/L	<100	<10	<10
1,1-Dichloroethene	µg/L	<10	<1	<1
Trans-1,2-dichloroethene	µg/L	<10	<1	<1
1,1-dichloroethane	µg/L	<10	<1	<1
Cis-1,2-dichloroethene	µg/L	<10	<1	<1
Bromochloromethane	µg/L	<10	<1	<1
Chloroform	µg/L	<10	<1	<1
2,2-dichloropropane	µg/L	<10	<1	<1
1,2-dichloroethane	µg/L	<10	<1	<1
1,1,1-trichloroethane	µg/L	<10	<1	<1
1,1-dichloropropene	µg/L	<10	<1	<1
Cyclohexane	µg/L	380	<1	<1
Carbon tetrachloride	µg/L	<10	<1	<1
Benzene	µg/L	800	<1	<1
Dibromomethane	µg/L	<10	<1	<1
1,2-dichloropropane	µg/L	<10	<1	<1
Trichloroethene	µg/L	<10	<1	<1
Bromodichloromethane	µg/L	<10	<1	<1
trans-1,3-dichloropropene	µg/L	<10	<1	<1
cis-1,3-dichloropropene	µg/L	<10	<1	<1
1,1,2-trichloroethane	µg/L	<10	<1	<1
Toluene	µg/L	4,300	<1	<1
1,3-dichloropropane	µg/L	<10	<1	<1
Dibromochloromethane	µg/L	<10	<1	<1
1,2-dibromoethane	µg/L	<10	<1	<1
Tetrachloroethene	µg/L	<10	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<10	<1	<1
Chlorobenzene	µg/L	<10	<1	<1
Ethylbenzene	µg/L	1,400	<1	<1
Bromoform	µg/L	<10	<1	<1
m+p-xylene	µg/L	4,900	<2	<2
Styrene	µg/L	<10	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<10	<1	<1
o-xylene	µg/L	2,100	<1	<1

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	146064-1 MW2 3/05/2016 water	146064-3 MW24 3/05/2016 water	146064-4 MW25 3/05/2016 water
1,2,3-trichloropropane	µg/L	<10	<1	<1
Isopropylbenzene	µg/L	100	<1	<1
Bromobenzene	µg/L	<10	<1	<1
n-propyl benzene	µg/L	460	<1	<1
2-chlorotoluene	µg/L	<10	<1	<1
4-chlorotoluene	µg/L	<10	<1	<1
1,3,5-trimethyl benzene	µg/L	580	<1	<1
Tert-butyl benzene	µg/L	<10	<1	<1
1,2,4-trimethyl benzene	µg/L	3,300	<1	<1
1,3-dichlorobenzene	µg/L	<10	<1	<1
Sec-butyl benzene	µg/L	32	<1	<1
1,4-dichlorobenzene	µg/L	<10	<1	<1
4-isopropyl toluene	µg/L	13	<1	<1
1,2-dichlorobenzene	µg/L	<10	<1	<1
n-butyl benzene	µg/L	65	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<10	<1	<1
1,2,4-trichlorobenzene	µg/L	<10	<1	<1
Hexachlorobutadiene	µg/L	<10	<1	<1
1,2,3-trichlorobenzene	µg/L	<10	<1	<1
Surrogate Dibromofluoromethane	%	91	91	93
Surrogate toluene-d8	%	100	101	95
Surrogate 4-BFB	%	107	91	93

vTRH(C6-C10)/BTEXN in Water						
Our Reference:	UNITS	146064-1	146064-2	146064-3	146064-4	146064-7
Your Reference	---------- -	MW2	MW9	MW24	MW25	DUP1
Date Sampled	----------	3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Type of sample		water	water	water	water	water
Date extracted	-	05/05/2016	05/05/2016	05/05/2016	05/05/2016	05/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
TRHC$_6$ - C$_9$	µg/L	28,000	<10	<10	<10	<10
TRHC$_6$ - C$_{10}$	µg/L	37,000	<10	<10	<10	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	23,000	<10	<10	<10	<10
Benzene	µg/L	800	<1	<1	<1	<1
Toluene	µg/L	4,300	<1	<1	<1	<1
Ethylbenzene	µg/L	1,400	<1	<1	<1	<1
m+p-xylene	µg/L	4,900	<2	<2	<2	<2
o-xylene	µg/L	2,100	<1	<1	<1	<1
Naphthalene	µg/L	420	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	91	105	122	110	105
Surrogate toluene-d8	%	100	98	101	95	99
Surrogate 4-BFB	%	107	102	91	93	103

vTRH(C6-C10)/BTEXN in Water			
Our Reference:	UNITS	146064-9	146064-10
Your Reference	---------- -	TB	TS
Date Sampled	----------	2/05/2016	2/05/2016
Type of sample		water	water
Date extracted	-	05/05/2016	05/05/2016
Date analysed	-	06/05/2016	06/05/2016
TRHC$_6$ - C$_9$	µg/L	<10	[NA]
TRHC$_6$ - C$_{10}$	µg/L	<10	[NA]
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	[NA]
Benzene	µg/L	<1	99%
Toluene	µg/L	<1	98%
Ethylbenzene	µg/L	<1	100%
m+p-xylene	µg/L	<2	106%
o-xylene	µg/L	<1	105%
Naphthalene	µg/L	<1	[NA]
Surrogate Dibromofluoromethane	%	106	101
Surrogate toluene-d8	%	98	98
Surrogate 4-BFB	%	101	103

svTRH (C10-C40) in Water Our Reference: Your Reference	UNITS ----------	146064-1 MW2	146064-2 MW9	146064-3 MW24	146064-4 MW25	146064-7 DUP1
Date Sampled	----------	3/05/2016	3/05/2016	3/05/2016	3/05/2016	3/05/2016
Type of sample		water	water	water	water	water
Date extracted	-	6/05/2016	6/05/2016	6/05/2016	6/05/2016	6/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	07/05/2016	07/05/2016
TRHC$_{10}$ - C$_{14}$	µg/L	520,000	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	µg/L	130,000	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<10,000	<100	<100	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	420,000	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	420,000	<50	<50	<50	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	67,000	<100	<100	<100	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<10,000	<100	<100	<100	<100
Surrogate o-Terphenyl	%	#	87	87	98	96

OCP in water Our Reference: Your Reference	UNITS ----------	146064-5 DAM1	146064-6 DAM2
Date Sampled	-	3/05/2016	3/05/2016
Type of sample	----------	water	water
Date extracted	-	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	88	88

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	146064-1 MW2 3/05/2016 water	146064-3 MW24 3/05/2016 water	146064-4 MW25 3/05/2016 water	146064-5 DAM1 3/05/2016 water	146064-6 DAM2 3/05/2016 water
Date prepared	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016	06/05/2016	06/05/2016	06/05/2016
Arsenic-Dissolved	µg/L	<1	<1	<1	1	1
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.5	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	4	2	<1
Lead-Dissolved	µg/L	6	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	5	2	10	<1	<1
Zinc-Dissolved	µg/L	1	6	14	<1	<1

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	146064-7 DUP1 3/05/2016 water
Date prepared	-	06/05/2016
Date analysed	-	06/05/2016
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	6

Miscellaneous Inorganics Our Reference: Your Reference	UNITS ----------	146064-4 MW25	146064-5 DAM1	146064-6 DAM2
Date Sampled	----------	3/05/2016	3/05/2016	3/05/2016
Type of sample		water	water	water
Date prepared	-	05/05/2016	05/05/2016	05/05/2016
Date analysed	-	05/05/2016	05/05/2016	05/05/2016
Total Nitrogen in water	mg/L	[NA]	44	1.8
Bicarbonate Alkalinity as $CaCO_3$	mg/L	460	[NA]	[NA]
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	[NA]	[NA]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	[NA]	[NA]
Total Alkalinity as $CaCO_3$	mg/L	460	[NA]	[NA]

Metals in Waters - Acid extractable			
Our Reference:	UNITS	146064-5	146064-6
Your Reference	---------- -	DAM1	DAM2
Date Sampled	----------	3/05/2016	3/05/2016
Type of sample		water	water
Date prepared	-	06/05/2016	06/05/2016
Date analysed	-	06/05/2016	06/05/2016
Phosphorus - Total	mg/L	3.7	0.08

Method ID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Metals-020	Determination of various metals by ICP-AES.

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/05/2016	[NT]	[NT]	LCS-W1	05/05/2016
Date analysed	-			06/05/2016	[NT]	[NT]	LCS-W1	06/05/2016
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	89%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	91%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	90%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	97%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	109%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	92%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	94%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	100%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-013	92	[NT]	[NT]	LCS-W1	91%
Surrogate toluene-d8	%		Org-013	98	[NT]	[NT]	LCS-W1	106%
Surrogate 4-BFB	%		Org-013	92	[NT]	[NT]	LCS-W1	91%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/05/2016	[NT]	[NT]	LCS-W3	05/05/2016
Date analysed	-			06/05/2016	[NT]	[NT]	LCS-W3	06/05/2016
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	110%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	110%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	111%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	108%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	107%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W3	112%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	110%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	104	[NT]	[NT]	LCS-W3	102%
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	LCS-W3	100%
Surrogate 4-BFB	%		Org-016	92	[NT]	[NT]	LCS-W3	102%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	[NT]	[NT]	LCS-W1	06/05/2016
Date analysed	-			06/05/2016	[NT]	[NT]	LCS-W1	06/05/2016
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	109%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	121%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	100%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	109%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	121%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	100%
Surrogate o-Terphenyl	%		Org-003	85	[NT]	[NT]	LCS-W1	73%
QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			06/05/2016	146064-5	06/05/2016 || 06/05/2016	LCS-W1	06/05/2016
Date analysed	-			06/05/2016	146064-5	06/05/2016 || 06/05/2016	LCS-W1	06/05/2016
HCB	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
alpha-BHC	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	111%
gamma-BHC	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
beta-BHC	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	85%
Heptachlor	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	114%
delta-BHC	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
Aldrin	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	74%
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	80%
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]

QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
Endosulfan I	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
pp-DDE	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	84%
Dieldrin	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	85%
Endrin	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	101%
pp-DDD	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	93%
Endosulfan II	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
pp-DDT	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	LCS-W1	93%
Methoxychlor	µg/L	0.2	Org-005	<0.2	146064-5	<0.2 || <0.2	[NR]	[NR]
Surrogate TCMX	%		Org-005	71	146064-5	88 || 105 || RPD: 18	LCS-W1	71%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			06/05/2016	146064-4	06/05/2016 || 06/05/2016	LCS-W1	06/05/2016
Date analysed	-			06/05/2016	146064-4	06/05/2016 || 06/05/2016	LCS-W1	06/05/2016
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	<1 || <1	LCS-W1	98%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	146064-4	0.5 || 0.5 || RPD: 0	LCS-W1	101%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	<1 || <1	LCS-W1	95%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	4 || 4 || RPD: 0	LCS-W1	92%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	<1 || <1	LCS-W1	100%
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	146064-4	<0.05 || [N/T]	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	10 || 10 || RPD: 0	LCS-W1	99%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	146064-4	14 || 13 || RPD: 7	LCS-W1	97%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			05/05/2016	[NT]	[NT]	LCS-1	05/05/2016
Date analysed	-			05/05/2016	[NT]	[NT]	LCS-1	05/05/2016
Total Nitrogen in water	mg/L	0.1	Inorg-055/062	<0.1	[NT]	[NT]	LCS-1	97%
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NR]	[NR]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NR]	[NR]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NR]	[NR]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	LCS-1	112%

QUALITY CONTROL Metals in Waters - Acid extractable	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			06/05/2016	[NT]	[NT]	LCS-W1	06/05/2016
Date analysed	-			06/05/2016	[NT]	[NT]	LCS-W1	06/05/2016
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	LCS-W1	103%

QUALITY CONTROL OCP in water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	146064-6	06/05/2016
Date analysed	-	[NT]	[NT]	146064-6	06/05/2016
HCB	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	[NT]	[NT]	146064-6	87%
gamma-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	[NT]	[NT]	146064-6	86%
Heptachlor	µg/L	[NT]	[NT]	146064-6	84%
delta-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	[NT]	[NT]	146064-6	83%
Heptachlor Epoxide	µg/L	[NT]	[NT]	146064-6	83%
gamma-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	[NT]	[NT]	146064-6	84%
Dieldrin	µg/L	[NT]	[NT]	146064-6	85%
Endrin	µg/L	[NT]	[NT]	146064-6	99%
pp-DDD	µg/L	[NT]	[NT]	146064-6	92%
Endosulfan II	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDT	µg/L	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	[NT]	[NT]	146064-6	91%

QUALITY CONTROL OCP in water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	µg/L	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	146064-6	91%
QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	146064-1	06/05/2016 || 06/05/2016	146064-3	06/05/2016
Date analysed	-	146064-1	06/05/2016 || 06/05/2016	146064-3	06/05/2016
Mercury-Dissolved	µg/L	146064-1	<0.05 || <0.05	146064-3	96%

Report Comments:

METALS_W_TOTAL: Total metals: no preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

VOC in water: PQL has been raised due to the high concentration of analytes in the sample/s, resulting in the sample/s requiring dilution.

sTRH in water: PQL has been raised due to the high concentration of analytes in the sample/s, resulting in the sample/s requiring dilution.
Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

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.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Zoic Environmental
Project Mgr:	Silja Kuerzinger
Sampler:	SK / OC
Address:	Suite 4, Level 3, 105 Pitt Street Sydney 2000
Email:	silja.kuerziniger@zoic.com.au
Phone:	9231 1045 mobile 488991718

Client Project Name and Number:	DSI FABH WSPT
PO No.:	16035
Envirolab Services Quote No. :	
Date results required:	11-May-16
Or choose:	standard

Note: Inform lab in advance if urgent turnaround is required - surcharge applies

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Metals (8)	PAH	TRH C6-C9	TRH C10-C36	BTEX	OCP	OPP	Nitrogen / Phosphorous	Coliforms	Phenols	NEPM 2013 Asbesots					Comments
146058																			Provide as much information about the sample as you can
	TP40	3-May-16	PLASTIC BAG											x					
	TP41	3-May-16	PLASTIC BAG											x					
	TP42	3-May-16	PLASTIC BAG											x					
	TP43	3-May-16	PLASTIC BAG											x					
	DUP1	3-May-16	GLASS JAR	x					x										
	DUP2 (A)	3-May-16	GLASS JAR	x															
1	DUP2(B)	3-May-16	GLASS JAR	x		Please forward to ALS													
2	DUP3	3-May-16	GLASS JAR	x		Please forward to ALS													
	TS	2-May-16	VIAL			x	x												
	TB	2-May-16	VIAL			x	x												

Environmental Division
Sydney
Work Order Reference
ES1609818

Telephone : +61-2-8784 8555

Relinquished by (company):	Zoic	**Received by (company):**	
Print Name:	Silja Kuerzinger	**Print Name:**	
Date & Time:	5-May-16	**Date & Time:**	
Signature:		**Signature:**	

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

Form: 302 - Chain of Custody-Client, issued 14/02/08, Version 3, Page 1 of 1.

Frank ALS 6-5-16 1915

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1609818**	Page	: 1 of 2
Client	: **ZOIC ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Silja Kuerziniger	Contact	:
Address	: SUITE 4, LEVEL3 105 PITT STREET SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 9231 1045	Telephone	: +61-2-8784 8555
Project	: DSI FABH WSPT	Date Samples Received	: 06-May-2016 19:15
Order number	: 16035	Date Analysis Commenced	: 09-May-2016
C-O-C number	: ----	Issue Date	: 13-May-2016 12:33
Sampler	: Silja Kuerziniger		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		

NATA Accredited Laboratory 825
Accredited for compliance with ISO/IEC 17025.

NATA
WORLD RECOGNISED ACCREDITATION

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Client sample ID	**DUP2(B)**	**DUP3**	**----**	**----**	**----**
			Client sampling date / time	[03-May-2016]	[03-May-2016]	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES1609818-001**	**ES1609818-002**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	**17.2**	**23.3**	**----**	**----**	**----**
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	**12**	**----**	**----**	**----**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**----**	**----**	**----**
Chromium	7440-47-3	2	mg/kg	**15**	**27**	**----**	**----**	**----**
Copper	7440-50-8	5	mg/kg	**30**	**32**	**----**	**----**	**----**
Lead	7439-92-1	5	mg/kg	**17**	**42**	**----**	**----**	**----**
Nickel	7440-02-0	2	mg/kg	**16**	**15**	**----**	**----**	**----**
Zinc	7440-66-6	5	mg/kg	**55**	**179**	**----**	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	**----**	**----**	**----**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1609818**	Page	: 1 of 4
Client	: **ZOIC ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Silja Kuerziniger	Telephone	: +61-2-8784 8555
Project	: DSI FABH WSPT	Date Samples Received	: 06-May-2016
Site	: ----	Issue Date	: 13-May-2016
Sampler	: Silja Kuerziniger	No. of samples received	: 2
Order number	: 16035	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
DUP2(B),	DUP3	**03-May-2016**	**----**	----	----	**11-May-2016**	17-May-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
DUP2(B),	DUP3	**03-May-2016**	**09-May-2016**	30-Oct-2016	✓	**10-May-2016**	30-Oct-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
DUP2(B),	DUP3	**03-May-2016**	**09-May-2016**	31-May-2016	✓	**10-May-2016**	31-May-2016	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1609818**	Page	: 1 of 3
Client	: **ZOIC ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Silja Kuerziniger	Contact	:
Address	: SUITE 4, LEVEL3 105 PITT STREET SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 9231 1045	Telephone	: +61-2-8784 8555
Project	: DSI FABH WSPT	Date Samples Received	: 06-May-2016
Order number	: 16035	Date Analysis Commenced	: 09-May-2016
C-O-C number	: ----	Issue Date	: 13-May-2016
Sampler	: Silja Kuerziniger		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Accredited for compliance with
ISO/IEC 17025.

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WORLD RECOGNISED ACCREDITATION

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 449531)									
ES1609786-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.5	3.8	18.3	No Limit
ES1609822-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	13.5	13.5	0.00	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 447196)									
ES1609474-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	40	42	6.28	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	12	11.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	15	8.60	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	23	6.86	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	18	8.20	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	42	33	23.1	No Limit
ES1609831-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	5	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 447195)									
ES1609474-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1609831-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 447196)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.9	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.9	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	78.1	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.9	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.5	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	90.9	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.0	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 447195)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.1	70	105

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 447196)							
ES1609474-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	83.1	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	71.0	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	97.9	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	94.2	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.6	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	90.6	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 447195)							
ES1609474-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	91.4	70	130