



Detailed Site Investigation

Balaclava Retail Renewal Precinct

Prepared for:
City of Port Phillip
St Kilda Town Hall
99a Carlisle Street, St Kilda, 3182

14 December 2018





Distribution

Detailed Site Investigation, Balaclava Retail Renewal Precinct

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Executive Summary

Senversa Pty Ltd (Senversa) was engaged by the City of Port Phillip (CoPP) to undertake a Preliminary Site investigation (PSI) and a Detailed Site Investigation (DSI) for council owned parcels of land within the Balaclava Retail Renewal Precinct (the site).

The site comprises four parcels of land that forms part of the Balaclava Retail Renewal Precinct, which has been identified by CoPP for future mixed development. As such, a PSI and limited DSI was requested by Council to gain an understanding of the historical use of the site and potential contamination land issues that may affect development of the site.

The scope of the assessment works included:

- A desktop review of the site history and environmental setting
- Review of previous soil investigation works undertaken at 9 locations on site by the CoPP.
- Supplementary soil sampling at an additional 8 locations.
- Groundwater gauging and sampling of two existing monitoring wells installed by Tonkin and Taylor.

The desktop site history review identified that the site and wider area was developed in the 1880s and has been predominately occupied by residential dwellings with commercial / retail uses concentrated along Carlisle and Chapel Streets. All buildings which previously occupied the site were cleared sometime in the 1970s and the site has subsequently been used as a carpark.

Site investigation works undertaken across the site showed that the site was underlain by fill soils, ranging in depths from 0.3 to 0.8m bgl. These fill soils typically consisted of dark grey sandy gravel soils with trace bitumen fragments, underlain by natural silty to sandy clays. Groundwater was measured at depths of 2.8 to 3.4 m bgl.

Chemical testing of the soils identified metal (lead, nickel, zinc), benzo(a)pyrene and semi-volatile total recoverable hydrocarbon impacts in the fill soils that were generally confined to shallow depths (to around 0.3 m bgl) underlying hardstand surfaces. These impacts were below human health investigation levels for high-density residential and commercial uses, with the exception of potential benzo(a)pyrene and lead hotspots at two locations.

Chemical testing of the groundwater identified inorganics (nitrate, cobalt, copper, manganese and zinc) above groundwater beneficial uses objectives, including maintenance of ecosystems, drinking water and primary contact recreation. These impacts are likely to represent background groundwater quality and/or regional contamination and the beneficial uses are unlikely to be realised at or near the site.

The identified soil and groundwater contamination is not considered to preclude development of the site and can be readily managed during construction. In the context of a proposed high-density residential use, the identified soil impacts pose a potential risk to human health and terrestrial ecosystems in unpaved areas. These areas are likely to require removal of hot spots or raising with 0.5m of clean imported soils. Where the site is proposed to be developed for mixed use with ground floor commercial uses, the identified soil impacts are not considered to pose an unacceptable risk to site users and could remain in-situ beneath hardstand surfaces and proposed building footprints.

For the off-site disposal of surplus soils, the soil hazard categorisation of the fill soils was consistent with a Category C Contaminated Soil categorisation, with the potential for some Category B Contaminated Soil hotspots identified at two locations during previous CoPP assessment works in 2015. The natural soils were consistent with a Fill Material categorisation.



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List of Acronyms

Acronym	Definition
ABC	Ambient background concentration
ACL	Added contaminant limit
AHD	Australian Height Datum
AS	Australian Standard
ANZECC	Australian and New Zealand Environment and Conservation Council
BTEX	Benzene, toluene, ethylbenzene, xylenes
COPP	City of Port Phillip
DO	Dissolved oxygen
EC	Electrical conductivity
EIL	Ecologically based investigation level
EPA	Environment Protection Authority (Victoria)
ESL	Ecological screening level
GQRUZ	Groundwater Quality Restricted Use Zone
HIL	Health-based investigation level
HSL	Health screening level
IWRG	Industrial Waste Resource Guidelines
LOR	Limit of reporting
LTV	Long term trigger values
m bgl	Metres below ground level
MAH	Monocyclic aromatic hydrocarbon
MMBW	Melbourne Metropolitan Board of Works
NAPL	Non-aqueous phase liquids
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated Biphenyl



Acronym	Definition
PID	Photo-ionisation detector
QA	Quality assurance
QC	Quality control
RHSV	Royal Historical Society of Victoria
RPD	Relative percentage difference
SEPP	State Environment Protection Policy
SEPP PMCL	State Environment Protection Policy (Prevention and Management of Contaminated Land)
SEPP Waters	State Environment Protection Policy (Waters)
STV	Short Term Trigger Values
SVOC	Semi-volatile organic compound
SWL	Standing water level
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TRH	Total recoverable petroleum hydrocarbons
USEPA	United States Environment Protection Agency
UST	Underground storage tank
µg/kg	Micrograms per kilogram
µg/L	Micrograms per litre
VOC	Volatile organic compound
VROM	Netherlands Ministry of Housing
VVG	Visualising Victoria's Groundwater database
WHO	World Health Organisation



1.0 Introduction

Senversa Pty Ltd (Senversa) was engaged by the City of Port Phillip (CoPP) to undertake a Preliminary Site investigation (PSI) and a Detailed Site Investigation (DSI) for council owned parcels of land within the Balaclava Retail Renewal Precinct (the site). The location and investigation boundary of the site is shown in **Figure 1**.

1.1 Background

The site is comprised of four separate parcels of land as shown in **Figure 1**. These are referred to herein as:

- Parcel 1 – 39-47 Camden Street, Balaclava
- Parcel 2 - The easement between 54 Camden Street and 10 Alfred Street, Balaclava
- Parcel 3 - 2-8 Alfred Street, Balaclava
- Parcel 4 – 49-53 Nelson Street, Balaclava

The parcels of land are currently zoned Commercial 1 Zone and form part of the Balaclava Retail Renewal Precinct that has been identified by CoPP for future mixed development. As such, a PSI and limited DSI was requested by Council to gain an understanding of the historical use of the site and potential contamination land issues that may affect development of the site.

The primary objectives of the assessment works were to:

- Gain an understanding of the historical use of the site and potential for land contamination to exist.
- Provide an indication of the soil and groundwater contamination status of the site.

1.2 Scope of Works Undertaken

Based on the project understanding and objectives described above, Senversa undertook the following scope of works:

- A desktop review of the environmental setting and site history, including:
 - A commissioned Royal Historical Society of Victoria (RHSV) search, including a review of the Sands and McDougall Directory records.
 - A review of historic aerial photographs of the site and the surrounding area.
 - A review of the environmental setting using current planning scheme information and published information including topographical, geological and hydrogeological maps.
 - A review of historical titles to identify previous occupants and potential land uses.
 - A review of EPA records of notices and licences, and of the current priority sites register.
 - A review of the Melbourne Metropolitan Board of Works (MMBW) online database of plans.
 - A review of environmental audit reports conducted on nearby properties.
 - A review of Groundwater Quality Restricted Use Zones in proximity to the precinct.
 - A search of the Visualising Victoria's Groundwater (VVG) database to establish any nearby potential extractive use of groundwater.
 - Worksafe Victoria (dangerous goods storage) and Energy Safe Victoria (cathodic protection systems for underground storage tanks) information for the precinct.
 - A review of Council building records existing for the site.
 - A general internet search of the site and surrounding area.



- A review of the report for previous works undertaken at site by the CoPP
- An inspection of the site to identify visible evidence of potential contamination sources, record current site infrastructure, site surface cover, surrounding land uses, topography and surface water drainage infrastructure.
- A soil investigation program involving the collection and analysis of samples from eight soil bore locations.
- Groundwater gauging and sampling of two monitoring wells installed as part of recently completed geotechnical investigation works (Tonkin Taylor, 2018).
- Laboratory analysis of soil and groundwater samples by laboratories accredited by the National Association of Testing Authorities (NATA) for the analytical methods used.
- Collation and interpretation of data, including a quality assurance / quality control (QA/QC) data validation process.
- Incorporation of historic soil analytical results obtained from an additional nine soil bore locations for works previously undertaken by the City of Port Phillip.
- Preparation of this report detailing the combined findings of the PSI and DSI works.

Senversa notes that the scope of the DSI was limited in nature and did not include a detailed scope to meet the standards of the *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)* (NEPM) (NEPC, 2013). It supplemented previous soil contamination assessment works completed at the site and utilised monitoring wells installed by others (Tonkin Taylor, 2018).



2.0 Site Description and Environmental Setting

2.1 Site Details

The following table summarises the relevant details of the site:

Item	Relevant Site Information
Site Address	Parcel 1 – 39-47 Camden Street, Balaclava Parcel 2 - The easement between 54 Camden Street and 10 Alfred Street, Balaclava Parcel 3 - 2-8 Alfred Street, Balaclava Parcel 4 – 49-53 Nelson Street, Balaclava
Title Plan Identifier	<p><u>Parcel 1</u> Lot 1 on Title Plan 696058T Lot 1 on Title Plan 702671Y Lot 1 on Title Plan 707315V Lot 1 on Title Plan 952966F</p> <p><u>Parcel 2</u> Lot 1 on Title Plan 438679C</p> <p><u>Parcel 3</u> Lot 1 on Title Plan 748693E Lot 1 on Title Plan 846586J</p> <p><u>Parcel 4</u> Lot 1 on Title Plan 904522R Lot 1 on Title Plan 245869W Lot 1 on Title Plan 232252P</p> <p>As per title survey provided in Appendix A</p>
Site Area	Approximately 3,781 m ²
Current Site Owner	City of Port Phillip
Municipality	City of Port Phillip
Current Land Use Zoning	Commercial 1 Zone (C1Z)
Site Overlays	Design and Development Overlay – Schedule 21 (DDO21) Special Building Overlay – Schedule 1 (SBO1)
Current Site Use	Carparking
Surrounding Land Use	<p>North – Residential</p> <p>East – Residential and Sandringham Rail Corridor</p> <p>South – Carlisle Street commercial retail, including Glasshouse Merchant café, fruit and vegetable stores, supermarkets (Coles and Woolworths), chemist, fast food stores.</p> <p>West – Residential, police station</p>

A summary of planning zones on and adjacent to has also been included within **Appendix A**.



2.2 Site Description

Senversa inspected the site on 22 November 2018 and observed it to be flat, asphalt covered carparking. Some scattered garden bed areas with trees were present. The surface of Parcel 2, which served as a supermarket loading bay, was concrete. The westernmost car park (Parcel 1) had recently been resurfaced and appeared raised compared to the adjacent bluestone-cobbled laneway. No above-ground buildings or infrastructure or evidence of historic infrastructure was observed at the site. Exceptions were a public toilet and a redundant water meter and pipe observed in the northeast of site along Alfred Street (Parcels 3 and 4). No pavement scarring or subsidence was observed that would indicate subsurface infrastructure, with the exception of evidence of a recent service trench from the public toilet.

Land use off-site to the north was observed to be residential housing. Land use west and south the site appeared to be predominately for retail, with some residential apartments. Several of the commercial/retail buildings south of the site along Carlisle Street were observed to have dates from the 1880s plastered on their facades.

Photographs of the site and surrounds have been included within **Appendix B**.

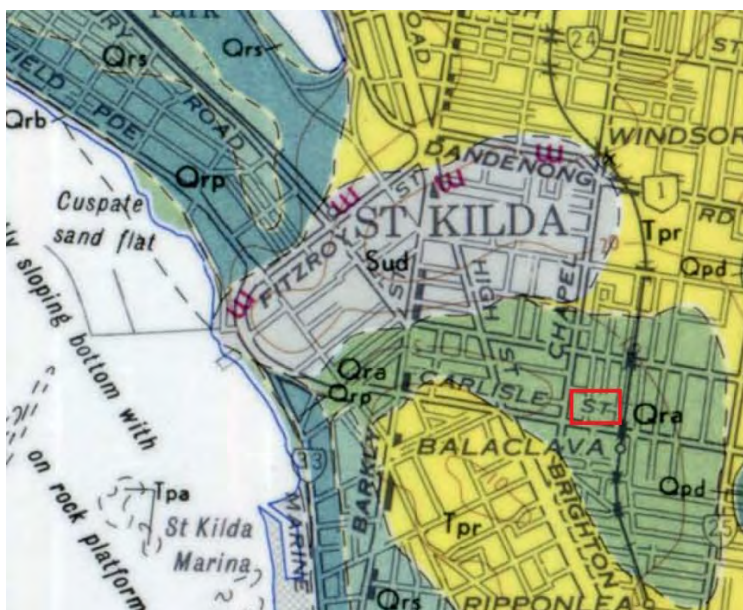
2.3 Environmental Setting


2.3.1 Topography and Drainage

The site and surrounding area is generally flat ranging 6 to 8 metres above height datum (m AHD). The surface is asphalt with minimal exposed soil in garden bed areas. Surface water runoff is expected to pool on the surface or be captured within the stormwater system before draining offsite along Camden and Nelson Streets.

2.3.2 Regional Geology

A review of available information from Geoscience Australia and the Geological Survey of Victoria indicates the surface geology of the site to be recent Quaternary Alluvial flats (Qra). These are described as silt, sandy silt, minor sand and gravel. This is underlain by Pliocene-aged Sandringham Sandstone (Tpr) (formerly known as Red Bluff Sands) of the Brighton Group. This is described as: Sandy silt, fine sandstone, sandy conglomerate to pebbly sandstone, clayey sand, clayey gravel, carbonaceous band including plant fossils; lag deposit including variable to highly-rounded pebbles; horizontal and swaley cross-lamination; burrows. Part of the Melbourne 1:63,360 Geological Map (Geological Survey of Victoria, 1974) is reproduced below.



 Approximate location of site



2.3.3 Regional Hydrogeology

Based on the regional geology and available information for nearby sites groundwater is expected to be present within Brighton Group Sediment at a depth of around 1 to 5 metres below ground level (m bgl). Regional flow is expected to be west to southwest towards Port Phillip Bay. The groundwater Database 'Visualising Victoria Groundwater' (VVG) indicates that the regional water table aquifer has a salinity in the range of 500 to 1,000 mg/L, which would classify the groundwater as Segment A2 in accordance with SEPP *Waters*.

2.3.4 Groundwater Bore Search

A review of registered bores within the VVG database identified 50 groundwater monitoring wells within 1 km of the site boundary. Of these, 11 were listed as "Non Groundwater", 26 listed as "SEC Bores (Use unidentified)", 1 "Domestic", 1 "Domestic and Stock", 4 "Groundwater Investigation" and 7 unlisted. A copy of the groundwater bore search results is attached as **Appendix C**.

2.3.5 Nearest Surface Water Bodies

The nearest surface water body to the site boundary is the downstream estuarine section of Elster Creek (around 1.3 km southwest). Port Phillip Bay is around 1.4 km west to southwest of the site. Albert Park Lake is around 2 km northwest.

2.4 EPA Online Resources

2.4.1 Priority Site Register Review

Priority sites are sites for which EPA has issued a clean-up notice pursuant to section 62A or a pollution abatement notice pursuant to section 31A or 31B (relevant to land and/or groundwater) of the *Environment Protection Act 1970*. Typically, these are sites where EPA has assessed that pollution of land and/or groundwater presents a potential risk to human health or to the environment, and where active management is required to reduce this risk.

A review of the EPA Priority Sites Register, which was last updated 31 October 2018, indicated no current Clean-up or Pollution Abatement Notices served on the site or any site within 1 km of its boundary.

2.4.2 Groundwater Quality Restricted Use Zones

Groundwater Quality Restricted Use Zones (GQRUZ) refer to an area where one or more beneficial uses of groundwater have been restricted and EPA identifies the zones on a searchable map. This is identified following an environmental audit, where the site has remaining groundwater pollution after clean-up attempts have been made. A review of EPA GQRUZ locations indicates no GQRUZ is present at the site. GQRUZs nearest to the site boundary are summarised as follows:

- 308 Carlisle Street Balaclava (73636-1), around 110 metres east to southeast, where restricted uses are drinking, livestock, irrigation, recreational and industrial water uses.
- 40-44 Pakington Street, St Kilda (73000-1), around 310 metres northwest, where restricted uses are drinking, irrigation, recreational and industrial water uses.
- 30 Inkerman Street, St Kilda (72485-1), around 820 metres northwest, where restricted uses are drinking, irrigation, recreational and industrial water uses.
- 433 Inkerman Street, St Kilda (62611-3), around 970 metres northeast, where restricted uses are drinking, livestock, irrigation and recreational water uses.
- 160 Hotham Street, St Kilda East (70169-1), around 1.1 km southeast, where restricted uses are drinking, livestock and recreational water uses.

Locations of these GQRUZs are shown within **Appendix D**.



2.4.3 Nearby Environmental Audits

EPA Victoria publishes a list of properties for which a certificate or statement of environmental audit has been issued under Part IXD of the *Environment Protection Act 1970*. These reports can provide useful information on the condition of nearby sites and the potential for contamination at the subject site. Pertinent findings of available Audit reports for the nearest five sites are summarised below.

Address	Distance and direction from site	EPA CARMS reference	Summary of Information
141 Chapel Street, St Kilda	65 m west	68898-1	<ul style="list-style-type: none"> Commercial property with Environmental Audit Overlay proposed for high density residential and commercial retail development. Prior to the 1980s, site use had been residential from at least 1931. Some fill soils contained concentrations of arsenic, lead and zinc in exceedance of ecological screening levels, and concentrations of lead, benzo(a)pyrene and total PAHs exceeding health investigation levels. Two groundwater wells were installed on site. Groundwater onsite was encountered at depths of 1.4 to 1.5 metres below ground level (m bgl) in Brighton Group sediment. Elevated concentrations of arsenic, copper, lead, zinc and mercury, exceeding maintenance of ecosystems criteria, were measured in groundwater and attributed to regional background pollution. Maintenance of ecosystems was not considered relevant due to the nearest surface water receptor being Port Phillip Bay, 1.2 km away.
308 Carlisle Street, Balaclava	110 m east to southeast	73636-1	<ul style="list-style-type: none"> Former service station proposed for redevelopment as high density residential. Concentrations of metals, PAHs and TRH in soil exceeded maintenance of ecosystems and human health criteria. Groundwater onsite was encountered at depths of 3.30 to 4.86 metres below ground level (m bgl) in Brighton Group sediment. All relevant groundwater beneficial uses were considered precluded with the exception of Buildings and Structures Site requires coverage with permanent hardstand or 0.5 metres of clean fill within garden beds.
126 Chapel Street, St Kilda	120 m south to southeast	67247-1	<ul style="list-style-type: none"> Historic motor workshop and pharmaceutical manufacturing site proposed for high density residential development with ground floor commercial. Concentrations of antimony, lead, benzo(a)pyrene, polycyclic aromatic hydrocarbons and petroleum hydrocarbons remain in fill soils at the site. Groundwater onsite was encountered at depths of 3.9 to 4.2 metres below ground level (m bgl) in Brighton Group sediment. Groundwater salinity ranged 1,300 to 2,000 mg/L TDS. Groundwater is impacted by heavy metals and nitrate considered to be representative of regional groundwater, not site derived contamination.
128-140 Chapel Street, St Kilda	150 m south to southwest	35722-1	<ul style="list-style-type: none"> Former State Electricity Commission substation site proposed for redevelopment as residential. Elevated concentrations of metals, PAHs and TRH were measured in fill soils. Site was considered suitable for development allowing minimal access to soils.



Address	Distance and direction from site	EPA CARMS reference	Summary of Information
126 Carlisle Street, St Kilda East	240 m west	41002-1	<ul style="list-style-type: none"> • Site historically used as motor engineers and mechanics proposed for redevelopment as residential. • Elevated concentrations of metals were measured throughout fill material. • Elevated concentrations of BTEX, PAHs and TRH were measured in soil. • Groundwater was encountered at 3.5 m bgl and TDS ranged 750 to 2,700 mg/L with inferred flow west towards Port Phillip Bay. • BTEX contamination measured in groundwater. • Six USTs were excavated and vacuum extraction used to remediate groundwater. • Soil and groundwater concentrations of MAHs and TRH exceeding adopted guidelines remained following vacuum extraction. • A Statement was issued as the Auditor considered that the site would be suitable for its proposed use for high density residential and would not adversely affect surrounding beneficial uses provided the Environmental Management Plan was implemented.

In summary, the review of the surrounding environmental audit reports identified the following key findings:

- Surface fill material within nearby properties contained elevated concentrations of metals and polycyclic aromatic hydrocarbons (PAHs). This indicates a possibility of widespread impacts associated with historic filling with contaminated soils.
- Groundwater is likely to be encountered at depths of around 1.5 m to 4.0 m below ground level (bgl) in Brighton Group sediment and is anticipated to flow west towards Port Phillip Bay.
- Groundwater contamination identified at nearby sites has included regionally elevated concentrations of arsenic, copper, lead, zinc and mercury. Elevated concentrations of petroleum hydrocarbons have also historically been measured within groundwater underlying some nearby sites.



3.0 Site History

The following section details the review of relevant publicly available information pertaining to the site and its historical occupation and use.

3.1 Historical Title Searches

Feigl & Newell P/L was engaged to undertake a historical title search of the ten separate titles contained within the site. All historic titles were held by individuals whose occupations, where listed, included a tailor, labourers, plumber, sales people, fruiterers, a decorator, carpenter, baker, manufacturer, chemist, fur flasher and butcher. Titles were transferred to The Mayor Councillors And Citizens Of The City Of St Kilda between 1961 and 1977, which corresponds to the time the parcels were developed for car park use. All titles were transferred to Port Phillip City Council in 2013.

The complete historical title search information, including a figure showing the four individual lots described above is provided in **Appendix A**.

3.2 Royal Historical Society of Victoria Search

The Royal Historical Society of Victoria (RHSV) was engaged to undertake a search of the site including a review of the Sands and MacDougal directories. The information obtained is provided in **Appendix E** and summarised as follows:

- The site was considered to have been located within the suburb of St Kilda, up until the 1950s when the suburb became known as Balaclava.
- The area was first developed in the 1880s onwards, however street numbers were not adopted until around 1900.
- Information within the 1900 Sands & McDougall Directory indicates that the area was primarily occupied by individual residential properties. Possible exceptions included a Carpenter and Joiner occupying 57 Nelson Street, a stone farrier occupying 59, a produce merchant at number 63 (all located off-site, south of Parcel 4).
- Occupants in subsequent directories are otherwise listed as individuals, indicating occupancy to have likely been residential until 1964 when 2-4 Alfred Street (Parcel 3) is listed as a carpark, and in 1974 when another carpark is listed "53 Nelson Prahran City Council shoppers' car park" (Parcel 4).

3.3 Historical Aerial Photographs

A total of six historical aerial photographs were obtained dating back to 1931. From 1931 to 1960 the quality of aerial imagery is poor, however based on the size and shape of buildings the site appears to have been predominately occupied by residential buildings. Most of the surrounding area was also residential with commercial buildings fronting Carlisle Street. In 1931, a large open area is visible between Carlisle and Chapel Streets and Brighton Road behind the town hall. This appears to have slowly developed into the current recreation reserve of St Kilda Primary School.

By 1975, all buildings had been cleared from the site and covered by asphalt carparking. Large commercial shopping centre buildings (current Woolworths and Coles supermarkets) had been constructed along Alfred Street, but overall there appeared to be little change to the surrounding area.

Sometime between 1986 and 2018, a building adjoining the southeast site boundary was demolished and the area became part of the carpark. A larger commercial or light industrial building and at least one residential dwelling immediately west of the site had also been demolished and the current police station building was constructed. Many of the residential and commercial buildings observed in the 1931 aerial remain.



Aerials photographs of the site are attached as **Appendix F**.

3.4 Previous Environmental Investigations

3.4.1 Soil Contamination Investigations

The City of Port Phillip provided Senversa with one factual report documenting the sampling and analysis of soil from nine onsite and one offsite soil bore locations (CoPP, 2015). These works were completed internally by an in-house environmental scientist within CoPP.

Samples of the fill material as well as underlying natural soils were analysed from each location and compared against IWRG621 soil waste hazard categorisation thresholds. Elevated concentrations of arsenic, lead, tin, zinc, benzo(a)pyrene and total PAHs were measured within fill soils.

Analytical results for the soil investigation undertaken by City of Port Phillip have been tabulated alongside the results of Senversa's investigation within **Tables 1 and 3**. The location of the soil bores and exceedances of adopted investigation levels is presented alongside Senversa's soil bore locations on **Figures 2 to 4**. The City of Port Phillip report is attached within **Appendix G**.

3.4.2 Groundwater Investigations

In November 2018, Tonkin and Taylor completed geotechnical investigation works for the site. This included the installation and development of two monitoring wells (BH01 and BH05), which were gauged and sampled as part of this investigation. During subsequent groundwater monitoring and analysis, Senversa has referred to the installed wells as MW01 and MW02 respectively. Construction and development are detailed within the Tonkin and Taylor geotechnical report attached within **Appendix G**.

3.5 Other Information Searches

3.5.1 MMBW Plans

One Melbourne Metropolitan Board of Works plan for the area was reviewed and is attached within **Appendix E**. The 1897 plan indicates that the site and its surrounds were principally occupied by residential dwellings. 2-89 Alfred Street appears to be vacant undeveloped land. A tramway shed was present on the corner of Chapel and Carlisle Streets. No potentially contaminating on or off-site land uses are indicated by the map.

3.5.2 Council Building Records

A request of available council building records was made to City of Port Phillip 21 November 2018. Available information provided by Council on 11 December 2018 was limited to information on the construction of the toilet block observed on site, and alterations and demolition of existing buildings on site. The records do not include site layout plans or identify potentially contaminating sources. Information provided by the City of Port Phillip is attached in **Appendix H**.

3.5.3 Energy Safe Victoria

Energy Safe Victoria was contacted to search its database for registered cathodic protection systems associated with underground storage tanks (USTs). The database did not contain records of registered cathodic protection systems for the site. A copy of the Energy Safe Victoria response is included in **Appendix E**.



3.5.4 Dangerous Goods Records

Senversa submitted a request to WorkSafe Victoria for dangerous goods records associated with the site on 13 November 2018. Worksafe Victoria responded on 23 November 2018 stating that their database did not have any records of dangerous goods storage and handling for the site. A copy of the WorkSafe Victoria response is included in **Appendix E**.

3.5.5 Internet Search

A general internet search for the site provided no relevant additional information.

3.6 Summary of Site History

The site history information relevant to the purposes of this PSI is summarised below.

Year/s	Site History	Source
1880s- 1970s	The area was first developed in the 1880s and appeared to have been predominately residential with some commercial / retail buildings mostly fronting Carlisle and Chapel streets.	RHSV search, historical titles, MMBW plans, historical aerials, site inspection
1970s- Present	All buildings on the site were cleared sometime during the 1970s and it has since been used as a carpark. The area surrounding the site remains predominately residential with commercial development along Carlisle and Chapel Streets.	RHSV search, historical titles, historical aerials, site inspection

3.7 Potential Contamination Sources

The following table summarises the identified contaminating activities and potential sources of contamination (both current and past) that may have impacted the site. Chemicals of potential concern associated with these activities have been listed, based on Senversa's experience and the list of industries and chemicals provided in Australian Standard, AS 4482.1—2005 *Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*.

Potential Source/Activity	Potential Contaminants
Imported fill soil	Variable depending upon the source of the fill. Common contaminants include heavy metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, asbestos containing material, solid inert waste,
Demolition of buildings and structures	Historical demolition at the site may have left lead impacted soils, asbestos containing material, building rubble / inert waste.

As established within **Section 2.4**, there are a range of surrounding historic commercial and/or light industrial uses, including vehicle workshops and service stations, known to have historically caused localised impacts to groundwater. There is potential these may have impacted the regional quality of groundwater with contaminants such as metals, petroleum hydrocarbons and chlorinated solvents.



4.0 Fieldworks Program

4.1 Relevant Standards and Guidelines

The field program investigation was undertaken in accordance with relevant elements of the following guidelines and standards:

- Australian Standard AS 4482.1-2005: Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and Semi-Volatile Compounds. Standards Australia, 2005.
- Australian Standard AS 4482.2-1999: Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances. Standards Australia, 1999.
- *Groundwater Sampling Guidelines*, Publication 669, EPA Victoria, 2000.
- *Hydrogeological Assessment (Groundwater Quality) Guidelines*, Publication 668, EPA Victoria, 2006.
- *Industrial Waste Resource Guidelines (IWRG) - Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*, EPA Publication IWRG701, 2009.
- *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)*. National Environment Protection Council (NEPC), 2013.
- *State Environment Protection Policy (Groundwaters of Victoria)*, No. S160, EPA Victoria, December 1997 (SEPP (GoV)).
- *State Environment Protection Policy (Prevention and Management of Contamination of Land)*, (SEPP (PMCL)). State of Victoria, 2002.

4.2 Fieldworks

The site investigation works were undertaken between the 22 and 23 November 2018 and comprised:

- A soil investigation program involving the collection and analysis of samples from eight soil bore locations (SB01-SB08).
- A groundwater investigation program, involving gauging and sampling of two groundwater monitoring wells installed and developed by Tonkin and Taylor (MW1 (installed within BH01) and MW2 (installed within BH05)).

The fieldwork methodology used during the soil and groundwater investigation is provided in **Appendix I**. Soil and groundwater sampling locations are presented on the attached **Figure 2**.



4.3 Laboratory Analysis

All analytical methods utilised for the analysis of environmental samples in this ESA were accredited by NATA. Eurofins Pty Ltd (Eurofins) was used as the primary laboratory for both soil and groundwater analysis. Australian Laboratory Services Pty Ltd (ALS) was engaged as the secondary laboratory. The primary soil and groundwater samples were analysed for the following:

Matrix	Analysis
Soil	Soil samples were analysed for the following: <ul style="list-style-type: none"> • 4 primary samples for Vic EPA IWRG621 screen*. • 12 primary samples, and quality assurance samples comprising 1 blind duplicate and 1 split duplicate for IWRG Metals, TRH, and PAHs
Groundwater	Groundwater samples were analysed for the following: <ul style="list-style-type: none"> • 2 primary samples as well as 1 blind and 1 split duplicate for TRH, volatile organic compounds (VOCs), semi VOCs (SVOCs), NEPM metals (As, B, Be, Cd, Co, Cr(VI), Cu, Mn, Ni, Pb, Se, Zn, Hg) and total dissolved solids (TDS), nitrate and ammonia.

*Vic EPA IWRG621 Screen: IWRG Metals (arsenic, cadmium, copper, chromium VI, lead, mercury, molybdenum, nickel, tin, selenium, silver and zinc), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), monocyclic aromatic hydrocarbons (MAH), organochlorine pesticides (OCPs), volatile chlorinated hydrocarbons (VCHs), polychlorinated biphenyls (PCBs), cyanide, phenols and total fluoride.

4.4 Quality Assurance/Quality Control

Data QA/QC procedures were adopted by Senversa to provide a consistent approach to evaluation of whether the data quality objectives required by the project have been achieved. The process focused on assessment of the useability of the data in terms of accuracy and reliability in forming conclusions on the condition of the element of the environment being investigated.

Documentation of the data QA/QC assessment is presented within **Appendix J**. Overall the assessment of QA/QC processes was satisfactory. The results are therefore considered to be representative of chemical concentrations in the environmental media sampled at the time of sampling, and to be suitable to be used for their intended purpose of providing an understanding of the contamination status of soil and groundwater at the site.



5.0 Regulatory Framework for Assessment

The following sections outline the regulatory framework under which contamination of land and groundwater is assessed and managed in Victoria and specify relevant objectives and/or investigation levels which have been adopted for initial assessment of whether pollution is present at the site.

5.1 Soil

5.1.1 Regulatory Framework

The *State Environment Protection Policy (Prevention and Management of Contamination of Land) 2002* (SEPP (PMCL)) sets out the regulatory framework for the prevention and management of contaminated land within the State of Victoria. The intent of this framework is to maintain and maximise, to the extent practicable, the quality of the land environment in Victoria, in order to protect its existing and potential beneficial uses. The SEPP (PMCL) was declared in June 2002 in accordance with Section 16 of the *Environment Protection Act, 1970*, and EPA Victoria is responsible for its implementation.

The SEPP (PMCL) identifies a range of land use categories and relevant protected beneficial uses for each of these categories, as well as indicators (chemical or other characteristics) and objectives for these indicators to determine whether the level of an indicator may pose an unacceptable risk to (i.e. precludes) protected beneficial uses. A state of pollution exists where the concentration of a physical, chemical, biological or radiological characteristic (indicator) does not meet the relevant soil quality objective for that indicator and therefore precludes a protected beneficial use for a relevant land use category.

The protected beneficial uses of land at the site, and the soil quality objectives specified in the SEPP (PMCL) for each protected beneficial use of land, are discussed in the following sections.

5.1.2 Protected Beneficial Uses of Land

The site is currently used for commercial use and it is considered likely future uses of the site may include commercial and/or high density residential. In accordance with the SEPP (PMCL) the protected beneficial uses of land for commercial and high density residential use are the following:

- Maintenance of highly modified ecosystems.
- Human health.
- Buildings and structures.
- Aesthetics.

5.1.3 Soil Quality Objectives

Soil quality objectives (also commonly referred to as investigation levels) for the protected beneficial uses of land were adopted in accordance with Table 2 of the SEPP (PMCL) and are discussed in **Appendix K** of this report.

5.1.4 Waste Soil Categorisation

The soil investigation levels described above are relevant to the assessment of soil suitability for a given beneficial use of land where soil is to remain in place on a site. However, assessment criteria for soil which may be removed and disposed off-site are specified by the EPA Victoria Industrial Waste Resource Guidelines (IWRG) - *Soil Hazard Categorisation and Management*, June 2009 (Publication IWRG621). Soils that require off-site disposal can be categorised as Fill Material, Category C Contaminated Soil, Category B Contaminated Soil and Category A Contaminated Soil.



The following table is a summary of the category and management options for soil, as provided within Publication IWRG621.

Waste Categories	Description	Potential Management Options	Off-Site Disposal Requirements
Category A	Contaminated soils that display any specific hazard characteristics as listed in Table 1 IWRG621 or any contaminant levels above TC2 or ASLP2 thresholds as listed in Table 2 IWRG621.	<ul style="list-style-type: none"> On-site remediation. Off-site remediation. Storage pending availability of treatment. 	<ul style="list-style-type: none"> No disposal to landfill. EPA transport certificates must be used. Vehicles must hold EPA permit (unless exemption issued).
Category B	Contaminated soils with any contaminant level greater than TC1, but below TC2, or greater than ASLP1, but below ASLP2 as listed in Table 2 IWRG621.	<ul style="list-style-type: none"> On-site remediation. Off-site remediation. Disposal to Licensed facility. 	<ul style="list-style-type: none"> Disposal to licensed facility. EPA transport certificates must be used. Vehicles must hold EPA permit (unless exemption issued).
Category C	Soils with any contaminant level greater than TCO, but below the TC1 and ASLP1 thresholds as listed in Table 2 IWRG621.	<ul style="list-style-type: none"> On-site remediation. Off-site remediation. Disposal to Licensed facility. Secondary Beneficial Reuse. EPA Reclassification Application. 	<ul style="list-style-type: none"> Disposal to licensed landfill. EPA transport certificates must be used. Vehicles must hold EPA permit (unless exemption issued).
Fill Material	Soils with all contaminant levels below the TCO threshold as listed in Table 2 IWRG621.	<ul style="list-style-type: none"> No regulatory requirements. 	<ul style="list-style-type: none"> No regulatory requirements beyond general obligations of preventing adverse environmental and human health impacts from the deposit of the material.

5.2 Groundwater

5.2.1 Regulatory Framework

The *State Environment Protection Policy (Waters)* (SEPP Waters; State of Victoria, 2018) sets out the framework to protect and improve the quality of Victoria's waters (including groundwater), having regard to the principles of environment protection set out in the *Environment Protection Act 1970* (the Act).

The SEPP Waters defines a range of protected beneficial uses for defined segments of the groundwater environment, based on groundwater salinity (as TDS). The SEPP Waters also specifies indicators (chemical or other characteristics) and objectives to determine whether the level of an indicator may pose an unacceptable risk (i.e. potentially precludes) protected beneficial uses. Groundwater is considered polluted where one or more of the following situations exists:

- The groundwater quality objectives for any protected beneficial use are exceeded. Where groundwater quality objectives are exceeded by natural levels, the natural background levels become the objective.
- There is otherwise a detriment to a beneficial use (e.g. the presence of odours in water used for irrigation or recreation use).
- Non-aqueous phase liquid (NAPL) is present. All beneficial uses of groundwater are considered precluded where NAPL is present with the exception of Buildings and Structures which is considered precluded only when in contact with groundwater.



5.2.2 Relevant Groundwater Segment

A review of published information, laboratory analysis and field data from the site was undertaken to assess the groundwater segment at the site. The review indicated that:

- According to the VVG database, groundwater salinity in the uppermost aquifer is expected to range from 500 to 1,100 mg/L TDS.
- Based on groundwater investigations undertaken in surrounding audit reports, groundwater salinity ranged from 750 to 2,700 mg/L TDS.
- Laboratory measured TDS concentrations at the site ranged from 640 mg/L (MW02) to 930 mg/L (MW01).

Taking into consideration the above information, the underlying groundwater is considered to be Segment A2 (as defined in the SEPP (Waters)).

5.2.3 Protected Beneficial Uses of Groundwater

The SEPP (Waters) requires that Segment A2 groundwater is protected for the following beneficial uses:

- Water dependent ecosystems and species.
- Potable water supply (acceptable).
- Potable mineral water supply.
- Agriculture and irrigation (irrigation).
- Agriculture and irrigation (stock watering).
- Industrial and commercial.
- Water based recreation (primary contact recreation).
- Traditional owners' cultural values.
- Cultural and spiritual values.
- Buildings and structures.
- Geothermal properties.

5.2.4 Groundwater Quality Objectives

Groundwater quality objectives for the protected beneficial uses of groundwater were adopted in accordance with Table 3 of the SEPP (Waters), as outlined in **Appendix K** of this report.



6.0 Investigation Results and Findings

The section below presents the results and findings of the soil investigation works, which have been used to evaluate the risk contamination poses to the beneficial uses of land.

6.1 Sub-surface Conditions

The soil profile encountered at the site during Senversa's intrusive soil investigation has been summarised in the table below. Lithological logs of the soil profile are included in **Appendix L**.

Lithology	Approximate Depth Range (m bgl)	Generalised Description
Asphalt	Surface to 0.1 m	ASPHALT (30 to 100 mm thick) present at all investigation locations with the exception of SB05 where the surface covering was 150 mm thick concrete.
Fill	0.03 - 0.8 m	FILL: Dark grey sandy gravel to gravelly sand, fine to medium grained, sub-angular to angular gravels, trace bitumen often present at shallower depths.
Fill	0.25 - 0.8 m	FILL: Grey to brown sand to clayey sand, trace to minor gravels often present.
Natural Soils	0.5 - 1.5 m	Silty CLAY, high plasticity, grey-brown with orange-brown mottles, stiff, dry to moist, fine-grained, sub-rounded to rounded sands.
	0.8 – 1.5 m	Clayey SAND/ Sandy CLAY, low to medium plasticity, grey-brown with orange-brown mottles, soft to firm, dry, fine-grained, sub-rounded to rounded sands.

Groundwater levels within two wells installed by Tonkin and Taylor were gauged and field water quality parameters measured. The results are presented within field sheets attached as **Appendix M** and are summarised as follows:

- Measured depths to groundwater were 2.798 m bgl (MW01) and 3.395 m bgl (MW02).
- Field measured pH readings were 6.27 (MW01) and 5.98 (MW02).
- Groundwater was observed to be low turbidity with no odour or hydrocarbon sheen.

Lithology and construction details provided by Tonkin and Taylor indicate that groundwater bore locations were overdrilled through Brighton Group sediment into underlying clayey silts of the Melbourne Formation (encountered from 15 to 20 m bgl). Boreholes were then backfilled with bentonite up to 15-16 m bgl and were screened across the Brighton Group aquifer. BH01 was screened from 10.0 to 16.0 m bgl and BH05 was screened from 2.0 to 15.0 m bgl. Lithology and well construction details are provided within the Tonkin and Taylor report attached within **Appendix G**.



6.2 Laboratory Results

6.2.1 Soil

The soil analytical results from Senversa's investigation as well as the historic results collected by the City of Port Phillip have been compared against adopted health and ecological screening levels in the attached **Table 1** and are summarised as follows:

- All analysed soil samples reported chemical concentrations below the human health investigation levels, with the exception of:
 - one sample of fill soil collected from the southwest of the site 0.3 m bgl (BH2_0.3) which contained lead concentrations (3,840 mg/kg) above the NEPM HSL D (1,500 mg/kg) and HSL B (1,200 mg/kg); and
 - two samples of fill soil (BH1_0.2 and BH5_0.3), which contained benzo(a)pyrene (TEQ) concentrations (5.9 and 8.0 mg/kg respectively) above NEPM HSL B (4 mg/kg).
- Samples of fill collected from all locations (except BH8, BH10, SB05 and SB08) exceeded adopted ecological investigation levels for one or more of lead, nickel, zinc, benzo(a)pyrene and semi-volatile TRH.
- Samples in the natural soils reported concentrations below the human health investigation levels.

Laboratory certificates of analysis are attached as **Appendix N**. The locations of measured exceedances in soil are presented on the attached **Figure 3**.

6.2.2 Groundwater

Table 2 summarises the groundwater laboratory results compared to the adopted groundwater quality objectives for the protected beneficial uses of groundwater. A review of the results showed that:

- Concentrations of volatile and semi-volatile organic compounds were below laboratory detection limits.
- Concentrations of manganese and total dissolved solids exceeded the beneficial use criteria adopted for primary contact recreation and potable water.
- Concentrations of nitrate, cobalt, copper and zinc exceeded the beneficial criteria for maintenance of ecosystems.

Laboratory certificates of analysis are attached as **Appendix M**.

6.3 Discussion of Results

6.3.1 Soil

The findings of the soil investigations identified concentrations of nickel, zinc and hydrocarbons (benzo(a)pyrene and semi-volatile TRH) within shallow fill soils above the adopted ecological investigation levels. These soils were interpreted to be imported crushed rock and sand underlying hardstand surfaces and were sometimes observed to include weathered asphalt (i.e. angular gravels with trace bitumen). Isolated lead and benzo(a)pyrene (TEQ) concentrations were also measured above the human health investigation levels within shallow fill soil (BH1 and BH5).

Within deeper fill soils (i.e. at depths of between 0.4 and 0.8 m bgl) only concentrations of nickel exceeded adopted ecological investigation levels and these did not extend into the underlying natural soils.

In the context of a proposed high-density residential use (with garden areas), the identified soil impacts pose a potential risk to human health and terrestrial ecosystems and are likely to require some clean-up or management during construction. This would typically involve removal of hot spot areas or raising garden areas with 0.5m of clean imported soils.



Where the site is proposed to be developed for mixed use with ground floor commercial uses, the identified soil impacts are not considered to pose an unacceptable risk to site users and can be left in-situ beneath hardstand surfaces and proposed building footprints. Additionally, no volatile contaminants were measured in soil at concentrations which would pose risk of vapour accumulation within indoor spaces for any buildings constructed on the site.

Any soil requiring disposal offsite would require categorisation in accordance with the EPA Industrial Waste Resource Guidelines (IWRG). Senversa has compared soil analytical results against threshold limits from EPA Publication IWRG621 within the attached **Tables 3 and 4**. This suggests that fill soils at the site are generally likely to be classified as Category C Contaminated Soil and should be segregated from any natural soils excavated as these are likely to be considered clean “Fill material” in accordance with IWRG621. Exceptions to this are concentrations of benzo(a)pyrene measured within one location (BH5_0.3), and lead and tin within one location (BH2_0.3) indicative of Category B contaminated soil. The locations of measured exceedances of IWRG threshold limits are presented on the attached **Figure 4**.

During construction there is the potential for worker exposure to contamination during excavation works (e.g. trenching for installation of services or construction of foundations for new buildings). This risk is considered to be low and could be effectively managed under a construction environmental management plan, consistent with the control measures outlined in *Worksafe – Contaminated Construction Sites* (June 2017).

6.3.2 Groundwater

The identified concentrations of inorganic chemical analytes (nitrate, cobalt, copper, manganese and zinc) in groundwater beneath the site were consistent with surrounding audit reports and are considered to represent background groundwater quality and/or regional contamination. This is also supported by the absence of current or historic sources identified at the site.

With the exception of a manganese concentration measured within MW01, the above inorganic chemical analytes only exceeded the adopted beneficial use criteria for the maintenance of ecosystems. These criteria only apply at the point of discharge to surface water, the nearest of which would be either Elster Creek and/or Port Phillip Bay, both greater than 1 km from the site boundary.

While the measured concentration of manganese within MW01 exceeds the beneficial use criteria for primary contact recreation and potable water supply, these beneficial uses are unlikely to be realised at or near the site as no extractive use of groundwater has been identified and a reticulated water supply is present. Due to the shallow depth of groundwater potential for direct contact exposure or surface discharge during any deep excavation works (i.e. greater than 2 metres) should be considered as part of a construction environmental management plan.



7.0 Conclusions and Recommendations

The desktop site history review identified that the site and wider area was developed in the 1880s and has been predominately occupied by residential dwellings, with commercial / retail uses concentrated along Carlisle and Chapel Streets. All buildings which previously occupied the site were cleared sometime in the 1970s and the site has subsequently been used as a carpark.

Site investigation works undertaken across the site showed that the site was underlain by fill soils, ranging in depths from 0.3 to 0.8m bgl. These fill soils typically consisted of dark grey sandy gravel soils with trace bitumen fragments, underlain by natural silty to sandy clays. Groundwater was measured at depths of 2.8 to 3.4 m bgl.

Chemical testing of the soils identified metal (lead, nickel, zinc), benzo(a)pyrene and semi-volatile total recoverable hydrocarbon impacts in the fill soils that were generally confined to depths (to around 0.3 m bgl) underlying hardstand surfaces. These impacts were below human health investigation levels for high-density residential and commercial uses, with the exception of potential benzo(a)pyrene and lead hotspots at two locations.

Chemical testing of the groundwater identified inorganics (nitrate, cobalt, copper, manganese and zinc) above groundwater beneficial uses objectives, including maintenance of ecosystems, drinking water and primary contact recreation. These impacts are likely to represent background groundwater quality and/or regional contamination and the beneficial uses are unlikely to be realised at or near the site.

The identified soil and groundwater contamination is not considered to preclude development of the site and can be readily managed during construction. In the context of a proposed high-density residential use, the identified soil impacts pose a potential risk to human health and terrestrial ecosystems in unpaved areas. These areas are likely to require removal of hot spots or raising with 0.5m of clean imported soils. Where the site is proposed to be developed for mixed use with ground floor commercial uses, the identified soil impacts are not considered to pose an unacceptable risk to site users and could remain *in-situ* beneath hardstand surfaces and proposed building footprints.

For the off-site disposal of surplus soils, the soil hazard categorisation of the fill soils is consistent with a Category C Contaminated Soil categorisation, with the potential for some Category B Contaminated Soil hotspots that were identified at two locations during previous CoPP assessment works in 2015. The natural soils are consistent with a Fill Material categorisation.



8.0 Principles and Limitations of Investigation

8.1 General Principles and Limitations

The following principles (summarised in **Table 9.1**) are an integral part of site contamination assessment practices and are intended to be referred to in resolving any ambiguity or exercising such discretion as is accorded the user or site assessor.

Table 9.1 Summary of General Principles and Limitations

Area	Field Observations and Analytical Results
Elimination of Uncertainty	Some uncertainty is inherent in all site investigations. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population or area. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty.
Failure to Detect	Even when site investigation work is executed competently and in accordance with the appropriate Australian guidance, such as the National Environmental Protection (Assessment of Site Contamination) Amendment Measure ('the NEPM'), it must be recognised that certain conditions present especially difficult target analyte detection problems. Such conditions may include, but are not limited to, complex geological settings, unusual or generally poorly understood behaviour and fate characteristics of certain substances, complex, discontinuous, random, or heterogeneous distributions of existing target analytes, physical impediments to investigation imposed by the location of services, structures and other man-made objects, and the inherent limitations of assessment technologies.
Limitations of Information	The effectiveness of any site investigation may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and assessor to obtain such information.
Chemical Analysis Error	Chemical testing methods have inherent uncertainties and limitations. Senversa routinely seeks to require the laboratory to report any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.
Level of Assessment	The investigation herein should not be considered to be an exhaustive assessment of environmental conditions on a property. There is a point at which the effort of information obtained and the time required to obtain it outweigh the benefit of the information gained and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment.
Comparison with Subsequent Inquiry	The justification and adequacy of the investigation findings in light of the findings of a subsequent inquiry should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.
Data Useability	Investigation data generally only represent the site conditions at the time the data were generated. Therefore, the usability of data collected as part of this investigation may have a finite lifetime depending on the application and use being made of the data. In all respects, a future reader of this report should evaluate whether previously generated data are appropriate for any subsequent use beyond the original purpose for which they were collected or are otherwise subject to lifetime limits imposed by other laws, regulations or regulatory policies.
Nature of Advice	The investigation works herein are intended to develop and present sound, scientifically valid data concerning actual site conditions. Senversa does not seek or purport to provide legal or business advice.



8.2 Project Specific Uncertainties

Specific uncertainties and limitations noted for this investigation are as follows:

- Senversa has considered soil investigation results provided by City of Port Phillip as part of the current assessment. An assumption has been made that the information provided is accurate and that field collection techniques are such that the sample results obtained can be considered representative of in-situ soil conditions.
- Groundwater wells were installed by Tonkin and Taylor and construction and development details were not available to Senversa at the time of sampling. An assumption was made that the methods for installation and development were such that the groundwater sampled could be considered representative of aquifer conditions.
- Soil investigations performed at the site were completed by drilling soil bores. Whilst suitable for characterising soil for chemical contamination, soil boring is generally unsuitable for identification of solid inert waste or hazardous waste materials (e.g. asbestos containing material) within fill. Given that fill was encountered at the site, there is potential for solid inert wastes or hazardous materials to be present at the locations investigated that were not identified during the drilling. The confidence in detecting inert wastes or hazardous materials at the site could be improved by excavating test pits, although this was not completed as part of the works undertaken by Senversa due to the operational nature of the site as a car park.
- The scope of the DSI was limited in nature to address the due diligence objectives. Further site investigation works are likely to be required to satisfy planning conditions for development of the site and construction works (e.g. off-site disposal of soils).



9.0 References

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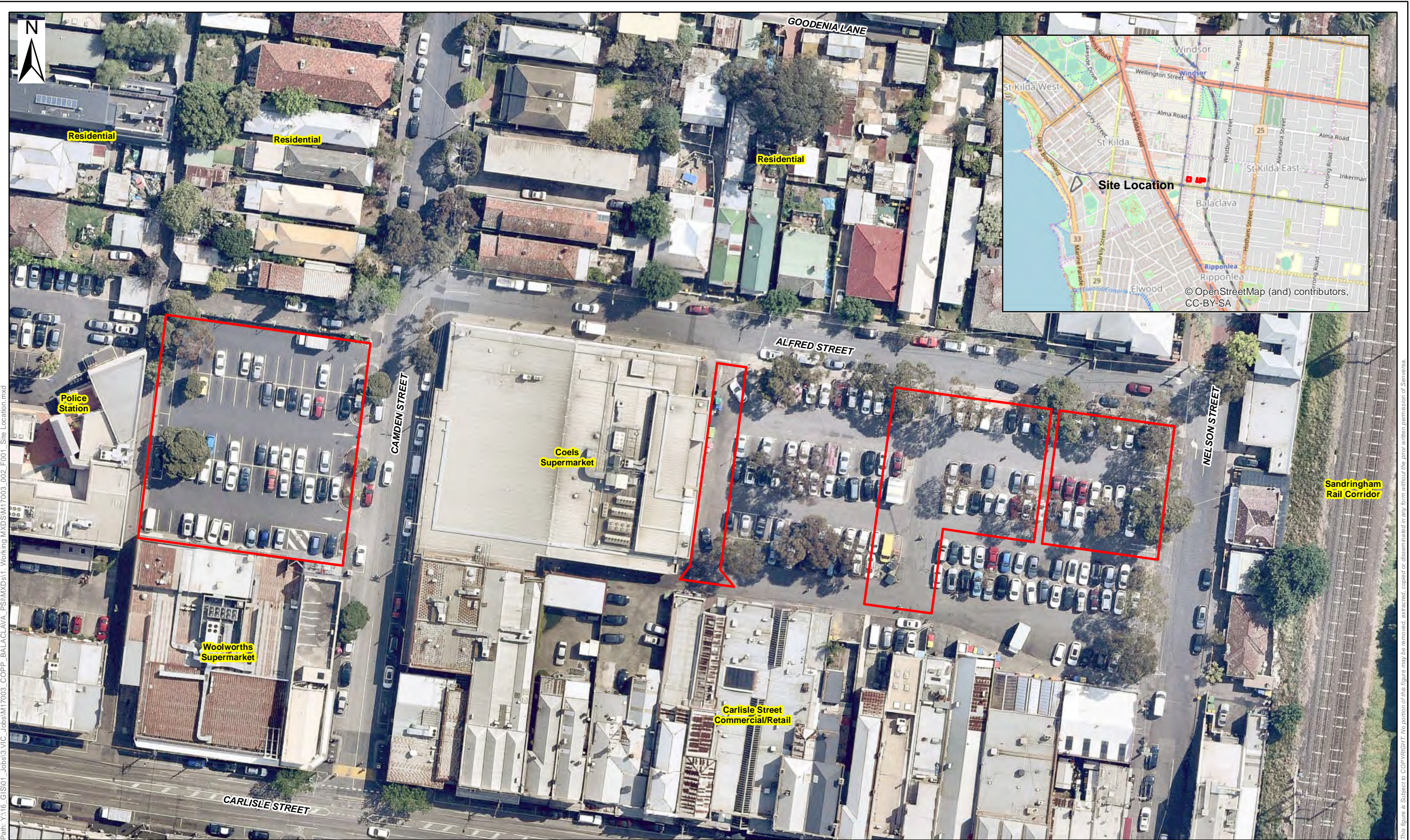
Figures

Figure 1: Site Location Plan

Figure 2: Investigation Locations

Figure 3: Exceedances of Investigation Levels

Figure 4: IWRG Categorisation (Fill Soils)



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Address: Level 6, 15 William Street
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Legend
 Site Boundary
 Surrounding Landuse

Notes:
 Cadastre and road data sourced from land.vic.gov.au (DELWP)
 Aerial imagery sourced from Nearmap Pty Ltd

Designed:	S. O'Connor	Date:	14/12/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:700 (A3)
File:	M17003_002_F001_Site Location		
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Datum GDA 1994, Projection MGA Zone 55			

Figure No:	1
Title:	Site Location and Surrounding Landuse
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



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Address: Level 6, 15 William Street
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Legend

- ⊕ Borehole (City of Port Phillip)
- ⊕ Soil Bore (Senversa)
- ⊕ Groundwater Monitoring Well (Installed by Tonkin and Taylor)
- Site Boundary

Notes:
Cadastral and road data sourced from land.vic.gov.au (DELWP)
Aerial imagery sourced from Nearmap Pty Ltd

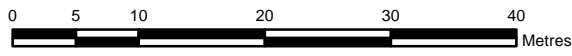
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 <p>Datum GDA 1994, Projection MGA Zone 55</p>			

Figure No:	2
Title:	Investigation Locations
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS\01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSM\XDRS1_Working\MXD\SI\M17003_002_F003_Soil Exceedence EIL.mxd

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- Legend**
- ⊕ Borehole (City of Port Phillip)
 - ⊕ Soil Bore (Senversa)
 - Site Boundary

Notes:
Cadastral and road data sourced from land.vic.gov.au (DELWP)
Aerial imagery sourced from Nearmap Pty Ltd

Designed:	S. O'Connor	Date:	14/12/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:700 (A3)
File:	M17003_002_F003_Soil Exceedence EIL		

0 5 10 20 30 40 Metres
Datum GDA 1994, Projection MGA Zone 55

Figure No:	3
Title:	Soil Exceedences of Investigation Levels
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSI\MXD011_Working\MXD\M17003_002_F004_Soil Exceedence IWRG.mxd

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Address: Level 6, 15 William Street
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- Legend**
- No Exceedence
 - Exceedence of IWRG Fill Material Upper Limits
 - Exceedence of IWRG Category C Upper Limits
 - Site Boundary

Notes:
Cadastre and road data sourced from land.vic.gov.au (DELWP)
Aerial imagery sourced from Nearmap Pty Ltd

Designed:	S. O'Connor	Date:	14/12/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:700 (A3)
File:	M17003_002_F004_Soil Exceedence IWRG		

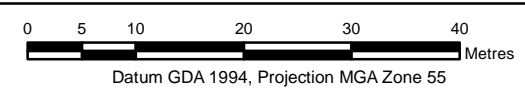


Figure No:	4
Title:	IWRG Categorisation (Fill Soils)
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Tables

Table 1: Soil Analytical Results vs Beneficial Use Criteria

Table 2: Groundwater Analytical Results vs Beneficial Use Criteria

Table 3: Soil Analytical Results vs IWRG Threshold Limits

Table 4: Soil Leachability Results vs IWRG Threshold Limits

Location Code	BH1						BH2						BH3						BH4						BH5						BH6	
Field ID	BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4	BH2_0.6	BH3_0.3	BH3_0.4	BH3_0.5	BH4_0.3	BH4_0.4	BH5_0.3	BH5_0.4	BH5_0.6	BH5_0.7	BH6_0.2	BH6_0.3															
Date	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015	6/05/2015															
Depth	0.2	0.4	0.2	0.3	0.4	0.6	0.3	0.4	0.5	0.3	0.4	0.3	0.4	0.6	0.7	0.2	0.3															
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal															
Lab Report No.	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725															

	Unit	EQL	NEPC 2013 - Human Health Setting 'B' - Residential	NEPC 2013 - Human Health Setting 'D' - Commercial / Industrial	NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space	NEPC 2013 - Maintenance of Ecosystems - Commercial / Industrial	BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4	BH2_0.6	BH3_0.3	BH3_0.4	BH3_0.5	BH4_0.3	BH4_0.4	BH5_0.3	BH5_0.4	BH5_0.6	BH5_0.7	BH6_0.2	BH6_0.3
Physical Parameters																							
Moisture Content	%	1					13.7	13.0	10.4	6.8	4.2	20.3	8.9	11.6	15.6	10.1	17.6	6.3	3.5	3.4	14.0	13.7	11.0
pH (Lab)	pH Units	0.1					7.9	-	-	-	-	8.0	8.1	-	7.8	-	-	-	7.2	-	-	-	8.1
Inorganics																							
Cyanide (Total)	mg/kg	1	300 ^{#1}	1500 ^{#11}			<1	-	-	-	-	<1	<1	-	<1	-	-	-	3	-	-	<1	-
Fluoride	mg/kg	40	3100 ^{#2}	47000 ^{#12}			50	-	-	-	-	180	140	-	110	-	-	-	50	-	-	150	-
Metals																							
Arsenic	mg/kg	2	500 ^{#1}	3000 ^{#11}	100 ^{#18}	160 ^{#29}	8	11	<5	34	7	9	<5	15	11	<5	8	<5	<5	<5	12	<5	15
Cadmium	mg/kg	0.4	150 ^{#1}	900 ^{#11}			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	2	500 ^{#3}	3600 ^{#13}	200 ^{#19}	320 ^{#30}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium(VI)	mg/kg	0.5	500 ^{#1}	3600 ^{#13}			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	mg/kg	5	30000 ^{#1}	240000 ^{#11}	70 ^{#20}	95 ^{#31}	47	<5	16	51	5	7	45	7	8	31	8	28	6	13	<5	34	6
Lead	mg/kg	5	1200 ^{#4}	1500 ^{#14}	1130 ^{#21}	1830 ^{#32}	720	355	154	3,840	40	32	37	40	18	<5	8	165	37	18	10	<5	7
Mercury	mg/kg	0.1	120 ^{#1}	730 ^{#11}			0.4	<0.1	0.7	1.7	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	
Molybdenum	mg/kg	2	390 ^{#2}	5800 ^{#12}			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel	mg/kg	2	1200 ^{#1}	6000 ^{#11}	35 ^{#20}	60 ^{#31}	15	6	11	29	6	21	101	7	18	107	12	47	4	2	9	96	15
Selenium	mg/kg	2	1400 ^{#1}	10000 ^{#11}			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	mg/kg	0.2	390 ^{#2}	5800 ^{#12}			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tin	mg/kg	5	47000 ^{#2}	700000 ^{#12}			15	<5	14	2,700	34	10	6	21	<5	<5	<5	7	14	<5	<5	<5	<5
Zinc	mg/kg	5	60000 ^{#1}	400000 ^{#11}	110 ^{#20}	150 ^{#31}	592	133	203	86	20	11	63	36	35	46	8	161	42	16	8	41	12
BTEX																							
Benzene	mg/kg	0.1	0.5 ^{#5}	3 ^{#15}	50 ^{#22}	75 ^{#33}	<0.2	-	-	-	-	<0.2	<0.2	-	<0.2	-	-	-	<0.2	-	-	<0.2	-
Toluene	mg/kg	0.1	160 ^{#6}	99000 ^{#15}	85 ^{#22}	135 ^{#33}	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	<0.5	-
Ethylbenzene	mg/kg	0.1	55 ^{#5}	27000 ^{#15}	70 ^{#22}	165 ^{#33}	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	<0.5	-
Xylene (m & p)	mg/kg	0.2					<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	<0.5	-
Xylene (o)	mg/kg	0.1					<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	<0.5	-
Total Xylene	mg/kg	0.3	40 ^{#5}	230 ^{#15}	45 ^{#23}	95 ^{#34}	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	<0.5	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																							
C6-C9 Fraction	mg/kg	10	45 ^{#6}	260 ^{#6}	180 ^{#24}	215 ^{#24}	<10	-	-	-	-	<10	<10	-	<10	-	-	-	<10	-	-	<10	-
C10-C14 Fraction	mg/kg	20	110 ^{#7}	20000 ^{#7}	120 ^{#25}	170 ^{#25}	<50	-	-	-	-	<50	<50	-	<50	-	-	-	<50	-	-	<50	-
C15-C28 Fraction	mg/kg	50					<100	-	-	-	-	<100	<100	-	<100	-	-	-	<100	-	-	<100	-
C29-C36 Fraction	mg/kg	50					<100	-	-	-	-	<100	<100	-	<100	-	-	-	<100	-	-	<100	-
C10-C36 Fraction (Sum)	mg/kg	50					<50	-	-	-	-	<50	<50	-	<50	-	-	-	<50	-	-	<50	-
Total Recoverable Hydrocarbons																							
C6-C10 Fraction	mg/kg	10					<10	-	-	-	-	<10	<10	-	<10	-	-	-	<10	-	-	<10	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10	45 ^{#6}	260 ^{#6}	180	215	<10	-	-	-	-	<10	<10	-	<10	-	-	-	<10	-	-	<10	-
>C10-C16 Fraction	mg/kg	50			120	170	<50	-	-	-	-	<50	<50	-	<50	-	-	-	<50	-	-	<50	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50	110 ^{#9}	20000 ^{#16}			<50	-	-	-	-	<50	<50	-	<50	-	-	-	<50	-	-	<50	-
>C16-C34 Fraction	mg/kg	100	5800 ^{#9}	27000 ^{#9}	300 ^{#26}	1700 ^{#26}	110	-	-	-	-	<100	<100	-	<100	-	-	-	<100	-	-	<100	-
>C34-C40 Fraction	mg/kg	100	8100 ^{#9}	38000 ^{#9}	2800 ^{#26}	3300 ^{#26}	<100	-	-	-	-	<100	<100	-	<100	-	-	-	<100	-	-	<100	-
>C10-C40 Fraction (Sum)	mg/kg	50					110	-	-	-	-	<50	<50	-	<50	-	-	-	<50	-	-	<50	-
PAHs																							
Acenaphthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	mg/kg	0.5			2.3	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.4	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5			0.7 ^{#27}	1.4 ^{#35}	4.4	<0.5	2.6	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.4	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	mg/kg	0.5					-	<0.5	3.3	1.6	<0.5	-	<0.5	-	<0.5	-	<0.5	6.7	-	<0.5	<0.5	-	<0.5
Benzo(b+) & Benzo(k)fluoranthene	mg/kg	0.5					8.1	-	-	-	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5					2.4	<0.5	1.8	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.4	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5					-	<0.5	1.1	0.7	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	2.2	-	<0.5	<0.5	-	<0.5
Chrysene	mg/kg	0.5					3.5	<0.5	2.0	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenzo(a,h)anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5					7.6	<0.5	4.5	2.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	12.2	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					2.2	<0.5	1.6	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.0	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	0.5	3 ^{#5}	11000 ^{#15}	170 ^{#28}	370 ^{#36}																	

Table 1: Soil Analytical Results vs Beneficial Use Criteria
M17003



		Location Code		06		SB07				SB08											
		Field ID		SB06_0.7-0.8		SB07_0.2-0.3		SB07_0.7-0.8		SB07_1.0-1.1		SB08_0.2-0.3		SB08_0.4-0.6		QA1		QA2		SB08_1.4-1.5	
		Date		23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018	
		Depth		0.7 - 0.8		0.2 - 0.3		0.7 - 0.8		1 - 1.1		0.2 - 0.3		0.4 - 0.6		0.4 - 0.6		0.4 - 0.6		1.4 - 1.5	
		Sample Type		Normal		Normal		Normal		Normal		Normal		Normal		Field_D		Interlab_D		Normal	
		Lab Report No.		629544		629544		629544		629544		629544		629544		629544		EM1818997		629544	
	Unit	EQL	NEPC 2013 - Human Health Setting 'B' - Residential	NEPC 2013 - Human Health Setting 'D' - Commercial / Industrial	NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space	NEPC 2013 - Maintenance of Ecosystems - Commercial / Industrial															
Physical Parameters																					
Moisture Content	%	1					6.3	1.2	<1	11	6.1	2.5	1.8	5.5	9.1						
pH (Lab)	pH Units	0.1					-	-	8.9	-	-	-	-	-	-						
Inorganics																					
Cyanide (Total)	mg/kg	1	300 ^{#1}	1500 ^{#11}			-	-	<5	-	-	-	-	-	-						
Fluoride	mg/kg	40	3100 ^{#2}	47000 ^{#12}			-	-	<100	-	-	-	-	-	-						
Metals																					
Arsenic	mg/kg	2	500 ^{#1}	3000 ^{#11}	100 ^{#18}	160 ^{#29}	<2	<2	<2	26	<2	25	<2	<5	10						
Cadmium	mg/kg	0.4	150 ^{#1}	900 ^{#11}			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1	<0.4						
Chromium	mg/kg	2	500 ^{#3}	3600 ^{#13}	200 ^{#19}	320 ^{#30}	44	8.2	<5	30	10	7.8	<5	10	13						
Chromium(VI)	mg/kg	0.5	500 ^{#1}	3600 ^{#11}			-	-	<1	-	-	-	-	-	-						
Copper	mg/kg	5	30000 ^{#1}	240000 ^{#11}	70 ^{#20}	95 ^{#31}	51	13	<5	5.4	9.9	<5	<5	<5	<5						
Lead	mg/kg	5	1200 ^{#4}	1500 ^{#14}	1130 ^{#21}	1830 ^{#32}	<5	<5	<5	9.2	8.3	10	12	27	8.3						
Mercury	mg/kg	0.1	120 ^{#1}	730 ^{#11}			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1						
Molybdenum	mg/kg	2	390 ^{#2}	5800 ^{#12}			<5	<5	<5	<5	<5	<5	<5	<5	<5						
Nickel	mg/kg	2	1200 ^{#1}	6000 ^{#11}	35 ^{#20}	60 ^{#31}	99	18	<5	15	17	<5	<5	3	12						
Selenium	mg/kg	2	1400 ^{#1}	10000 ^{#11}			<2	<2	<2	<2	<2	<2	<2	<5	<2						
Silver	mg/kg	0.2	390 ^{#2}	5800 ^{#12}			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2						
Tin	mg/kg	5	47000 ^{#2}	700000 ^{#12}			<10	<10	<10	<10	<10	<10	<10	<5	<10						
Zinc	mg/kg	5	60000 ^{#1}	400000 ^{#11}	110 ^{#20}	150 ^{#31}	67	21	<5	9.5	39	42	37	81	20						
BTEX																					
Benzene	mg/kg	0.1	0.5 ^{#5}	3 ^{#15}	50 ^{#22}	75 ^{#33}	-	-	<0.1	-	-	-	-	<0.2	-						
Toluene	mg/kg	0.1	160 ^{#6}	99000 ^{#15}	85 ^{#22}	135 ^{#33}	-	-	<0.1	-	-	-	-	<0.5	-						
Ethylbenzene	mg/kg	0.1	55 ^{#5}	27000 ^{#15}	70 ^{#22}	165 ^{#33}	-	-	<0.1	-	-	-	-	<0.5	-						
Xylene (m & p)	mg/kg	0.2	-	-	-	-	-	-	<0.2	-	-	-	-	<0.5	-						
Xylene (o)	mg/kg	0.1	-	-	-	-	-	-	<0.1	-	-	-	-	<0.5	-						
Total Xylene	mg/kg	0.3	40 ^{#5}	230 ^{#15}	45 ^{#23}	95 ^{#34}	-	-	<0.3	-	-	-	-	<0.5	-						
Total BTEX	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	<0.2	-						
Total Petroleum Hydrocarbons																					
C6-C9 Fraction	mg/kg	10	45 ^{#6}	260 ^{#6}	180 ^{#24}	215 ^{#24}	<20	<40	<20	<20	<20	<20	<20	<10	<20						
C10-C14 Fraction	mg/kg	20	110 ^{#7}	20000 ^{#7}	120 ^{#25}	170 ^{#25}	<20	20	<20	<20	<20	<20	<20	<50	<20						
C15-C28 Fraction	mg/kg	50	-	-	-	-	<50	430	<50	<50	52	<50	<50	<100	<50						
C29-C36 Fraction	mg/kg	50	-	-	-	-	<50	1,400	<50	<50	170	<50	<50	<100	<50						
C10-C36 Fraction (Sum)	mg/kg	50	-	-	-	-	<50	1,850	<50	<50	222	<50	<50	<50	<50						
Total Recoverable Hydrocarbons																					
C6-C10 Fraction	mg/kg	10	-	-	-	-	<20	<40	<20	<20	<20	<20	<20	<10	<20						
C6-C10 Fraction minus BTEX (F1)	mg/kg	10	45 ^{#6}	260 ^{#6}	180	215	<20	<40	<20	<20	<20	<20	<20	<10	<20						
>C10-C16 Fraction	mg/kg	50	-	-	120	170	<50	<50	<50	<50	<50	<50	<50	<50	<50						
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50	110 ^{#8}	20000 ^{#16}	-	-	<50	<50	<50	<50	<50	<50	<50	<50	<50						
>C16-C34 Fraction	mg/kg	100	5800 ^{#9}	27000 ^{#9}	300 ^{#26}	1700 ^{#26}	<100	2,000	<100	<100	210	<100	<100	<100	<100						
>C34-C40 Fraction	mg/kg	100	8100 ^{#9}	38000 ^{#9}	2800 ^{#26}	3300 ^{#26}	<100	430	<100	<100	110	<100	<100	<100	<100						
>C10-C40 Fraction (Sum)	mg/kg	50	-	-	-	-	<100	2,430	<100	<100	320	<100	<100	<50	<100						
PAHs																					
Acenaphthene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Acenaphthylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Anthracene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benz(a)anthracene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(a)pyrene	mg/kg	0.5	-	-	0.7 ^{#27}	1.4 ^{#35}	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(b+j)fluoranthene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(b+j) & Benzo(k)fluoranthene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(g,h,i)perylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(k)fluoranthene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Chrysene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Dibenz(a,h)anthracene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Fluoranthene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Fluorene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Naphthalene	mg/kg	0.5	3 ^{#5}	11000 ^{#15}	170 ^{#28}	370 ^{#36}	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Phenanthrene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Pyrene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Benzo(a)pyrene TEQ (Zero)	mg/kg	0.5	4 ^{#1}	40 ^{#11}	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Sum of Polycyclic aromatic hydrocarbons (PAH)	mg/kg	0.5	400 ^{#1}	4000 ^{#11}	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Phenols																					
2-Methylphenol	mg/kg	0.2	3200 ^{#2}	41000 ^{#12}			-	-	<0.2	-	-	-	-	-	-						
2-Nitrophenol	mg/kg	1	-	-	-	-	-	-	<1	-	-	-	-	-	-						
2,4-Dimethylphenol	mg/kg	0.5	1300 ^{#2}	16000 ^{#12}			-	-	<0.5	-	-	-	-	-	-						

Location Code	BH1		BH2				BH3			BH4		BH5				BH6						
	Field ID	Date	Depth	Sample Type	Lab Report No.	BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4	BH2_0.6	BH3_0.3	BH3_0.4	BH3_0.5	BH4_0.3	BH4_0.4	BH5_0.3	BH5_0.4	BH5_0.6	BH5_0.7	BH6_0.2	BH6_0.3
Hexachlorobenzene	mg/kg	0.03	15 ^{#1}	80 ^{#11}		<0.18	-	-	-	-	<0.03	<0.18	-	<0.04	-	-	-	<0.04	-	-	<0.17	-
Polychlorinated Biphenyls																						
Aroclor 1016	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCBs (Sum of total)	mg/kg	0.1	1 ^{#10}	7 ^{#17}		<0.7	-	-	-	-	<0.1	<0.7	-	<0.1	-	-	-	<0.1	-	-	<0.7	-
Solvents																						
Methyl Ethyl Ketone (MEK)	mg/kg	0.5	27000 ^{#2}	190000 ^{#12}		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	mg/kg	0.5	33000 ^{#2}	140000 ^{#12}		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	mg/kg	0.5	61000 ^{#2}	670000 ^{#12}		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allyl chloride	mg/kg	0.5	0.72 ^{#25}	3.2 ^{#12}		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	mg/kg	0.5	770 ^{#2}	3500 ^{#12}		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comments

- #1 NEPC (2013) - HIL 'B'.
- #2 USEPA RSLs (November 2018 Update) - Residential.
- #3 NEPC (2013) - HIL 'B'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
- #4 NEPC (2013) - HIL 'B'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
- #5 Friebel & Nadebaum (2011) - HSL-B.
- #6 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #7 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
- #8 HSL based on vapour intrusion pathway (sand <1 m depth)
- #9 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
- #10 NEPC (2013) - HIL 'B'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
- #11 NEPC (2013) - HIL 'D'.
- #12 USEPA RSLs (November 2018 Update) - Industrial.
- #13 NEPC (2013) - HIL 'D'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
- #14 NEPC (2013) - HIL 'D'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
- #15 Friebel & Nadebaum (2011) - HSL-D.
- #16 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.
- #17 NEPC (2013) - HIL 'D'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be undertaken.
- #18 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEPM.
- #19 NEPC (2013) EIL - Urban Residential and Public Open Space. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
- #20 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
- #21 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg
- #22 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.
- #23 NEPC (2013) ESL - Urban Residential and Public Open Space. Fine soil value (most conservative) adopted for initial screening.
- #24 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #25 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.
- #26 ESL for coarse soil adopted for initial screening.
- #27 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
- #28 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
- #29 NEPC (2013) EIL - Commercial and Industrial. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh contamination refer Schedule B7 of the NEPM.
- #30 NEPC (2013) EIL - Commercial and Industrial. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
- #31 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded.
- #32 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contamination is fresh (<2 years) or if EILs are exceeded. Assumes ABC of 30 mg/kg
- #33 NEPC (2013) ESL - Commercial and Industrial. Coarse soil value adopted for initial screening.
- #34 NEPC (2013) ESL - Commercial and Industrial. Fine soil value (most conservative) adopted for initial screening.
- #35 NEPC (2013) ESL - Commercial and Industrial. Value applies to both coarse and fine soil.
- #36 NEPC (2013) EIL - Commercial and Industrial. Value applies to both fresh and aged contamination.

Table 1: Soil Analytical Results vs Beneficial Use Criteria
M17003



Location Code			BH8		BH9			BH10			SB01		SB02	SB03		SB04	SB05		SE		
Field ID	Date	Depth	Sample Type	Lab Report No.	BH8_0.3	BH8_0.5	BH9_0.5	BH9_0.15	BH9_0.25	BH10_0.3	BH10_0.5	BH10_0.15	SB01_0.4-0.5	SB01_0.9-1.0	SB02_0.4-0.5	SB03_0.2-0.3	SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8	SB06_0.2-0.3
					EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	EM1504725	629544	629544	629544	629544	629544	629544	629544	629544	629544
Hexachlorobenzene	mg/kg	0.03	15 ^{#1}	80 ^{#11}	-	-	-	-	-	-	<0.04	<0.03	-	-	-	-	<0.05	-	<0.05	-	<0.05
Polychlorinated Biphenyls																					
Aroclor 1016	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1221	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1232	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1242	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1248	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1254	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
Aroclor 1260	mg/kg	0.1			-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	<0.1
PCBs (Sum of total)	mg/kg	0.1	1 ^{#10}	7 ^{#17}	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1
Solvents																					
Methyl Ethyl Ketone (MEK)	mg/kg	0.5	27000 ^{#2}	190000 ^{#12}	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	<0.5
4-Methyl-2-pentanone	mg/kg	0.5	33000 ^{#2}	140000 ^{#12}	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	<0.5
Acetone	mg/kg	0.5	61000 ^{#2}	670000 ^{#12}	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	<0.5
Allyl chloride	mg/kg	0.5	0.72 ^{#25}	3.2 ^{#12}	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	<0.5
Carbon disulfide	mg/kg	0.5	770 ^{#2}	3500 ^{#12}	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	<0.5

Comments

- #1 NEPC (2013) - HIL 'B'.
- #2 USEPA RSLs (November 2018 Update) - Residential.
- #3 NEPC (2013) - HIL 'B'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
- #4 NEPC (2013) - HIL 'B'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
- #5 Friebel & Nadebaum (2011) - HSL-B.
- #6 HSL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #7 HSL for TRH F2 adopted for this historical fraction. Where F2 data are available, screening based on this fraction is not required.
- #8 HSL based on vapour intrusion pathway (sand <1 m depth)
- #9 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
- #10 NEPC (2013) - HIL 'B'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be conducted.
- #11 NEPC (2013) - HIL 'D'.
- #12 USEPA RSLs (November 2018 Update) - Industrial.
- #13 NEPC (2013) - HIL 'D'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
- #14 NEPC (2013) - HIL 'D'. Assumes 50% bioavailability. Consider site-specific bioavailability where appropriate.
- #15 Friebel & Nadebaum (2011) - HSL-D.
- #16 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as vapour intrusion HSL is not limiting.
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- #23 NEPC (2013) ESL - Urban Residential and Public Open Space. Fine soil value (most conservative) adopted for initial screening.
- #24 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #25 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.
- #26 ESL for coarse soil adopted for initial screening.
- #27 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
- #28 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
- #29 NEPC (2013) EIL - Commercial and Industrial. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh or aged contamination.
- #30 NEPC (2013) EIL - Commercial and Industrial. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contact.
- #31 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contact.
- #32 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contact.
- #33 NEPC (2013) ESL - Commercial and Industrial. Coarse soil value adopted for initial screening.
- #34 NEPC (2013) ESL - Commercial and Industrial. Fine soil value (most conservative) adopted for initial screening.
- #35 NEPC (2013) ESL - Commercial and Industrial. Value applies to both coarse and fine soil.
- #36 NEPC (2013) EIL - Commercial and Industrial. Value applies to both fresh and aged contamination.

Location Code	SB07				SB08				
Field ID	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8	SB07_1.0-1.1	SB08_0.2-0.3	SB08_0.4-0.6	QA1	QA2	SB08_1.4-1.5
Date	23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018
Depth	0.7 - 0.8	0.2 - 0.3	0.7 - 0.8	1 - 1.1	0.2 - 0.3	0.4 - 0.6	0.4 - 0.6	0.4 - 0.6	1.4 - 1.5
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Field_D	Interlab_D	Normal
Lab Report No.	629544	629544	629544	629544	629544	629544	629544	EM1818997	629544

	Unit	EQL	NEPC 2013 - Human Health Setting 'B' - Residential	NEPC 2013 - Human Health Setting 'D' - Commercial / Industrial	NEPC 2013 - Maintenance of Ecosystems - Urban Residential / Public Open Space	NEPC 2013 - Maintenance of Ecosystems - Commercial / Industrial								
Hexachlorobenzene	mg/kg	0.03	15 ^{#1}	80 ^{#11}			-	-	<0.05	-	-	-	-	-
Polychlorinated Biphenyls														
Aroclor 1016	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1221	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1232	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1242	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1248	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1254	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
Aroclor 1260	mg/kg	0.1					-	-	<0.1	-	-	-	-	-
PCBs (Sum of total)	mg/kg	0.1	1 ^{#10}	7 ^{#17}			-	-	<0.1	-	-	-	-	-
Solvents														
Methyl Ethyl Ketone (MEK)	mg/kg	0.5	27000 ^{#2}	190000 ^{#12}			-	-	<0.5	-	-	-	-	-
4-Methyl-2-pentanone	mg/kg	0.5	33000 ^{#2}	140000 ^{#12}			-	-	<0.5	-	-	-	-	-
Acetone	mg/kg	0.5	61000 ^{#2}	670000 ^{#12}			-	-	<0.5	-	-	-	-	-
Allyl chloride	mg/kg	0.5	0.72 ^{#25}	3.2 ^{#12}			-	-	<0.5	-	-	-	-	-
Carbon disulfide	mg/kg	0.5	770 ^{#2}	3500 ^{#12}			-	-	<0.5	-	-	-	-	-

Comments

- #1 NEPC (2013) - HIL 'B'.
- #2 USEPA RSLs (November 2018 Update) - Residential.
- #3 NEPC (2013) - HIL 'B'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
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- #8 HSL based on vapour intrusion pathway (sand <1 m depth)
- #9 HSL based on direct contact pathways (Friebel and Nadebaum, 2011) as fraction is not volatile.
- #10 NEPC (2013) - HIL 'B'. Relates to non-dioxin like PCBs only. Where a PCB source is known or suspected, site-specific risk assessment should be conducted.
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- #13 NEPC (2013) - HIL 'D'. Value is for Chromium (VI). Refer Cr III and Cr VI results if speciated data are available.
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- #19 NEPC (2013) EIL - Urban Residential and Public Open Space. Value is for chromium III. Initial screening value applicable to all aged soils (see text).
- #20 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contact.
- #21 NEPC (2013) EIL - Urban Residential and Public Open Space. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contact.
- #22 NEPC (2013) ESL - Urban Residential and Public Open Space. Coarse soil value adopted for initial screening.
- #23 NEPC (2013) ESL - Urban Residential and Public Open Space. Fine soil value (most conservative) adopted for initial screening.
- #24 ESL for TRH F1 adopted for this historical fraction. Where F1 data are available, screening based on this fraction is not required.
- #25 ESL for TRH >C10-C16 adopted for this historical fraction. Where >C10-C16 data are available, screening based on this fraction is not required.
- #26 ESL for coarse soil adopted for initial screening.
- #27 NEPC (2013) ESL - Urban Residential and Public Open Space. Value applies to both coarse and fine soil.
- #28 NEPC (2013) EIL - Urban Residential and Public Open Space. Value applies to both fresh and aged contamination.
- #29 NEPC (2013) EIL - Commercial and Industrial. Value applies to aged arsenic (contamination present in soil for at least two years). For fresh o
- #30 NEPC (2013) EIL - Commercial and Industrial. Value is for chromium III. Initial screening value applicable to all aged soils (see text). Derive s
- #31 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contar
- #32 NEPC (2013) EIL - Commercial and Industrial. Initial screening value applicable to all aged soils (see text). Derive site-specific value if contar
- #33 NEPC (2013) ESL - Commercial and Industrial. Coarse soil value adopted for initial screening.
- #34 NEPC (2013) ESL - Commercial and Industrial. Fine soil value (most conservative) adopted for initial screening.
- #35 NEPC (2013) ESL - Commercial and Industrial. Value applies to both coarse and fine soil.
- #36 NEPC (2013) EIL - Commercial and Industrial. Value applies to both fresh and aged contamination.

Table 3: Soil Analytical Results vs IWRG Threshold Limits
M17003



Location Code			SB07										SB08						
Field ID	SB07		SB07_1.0-1.1		SB08_0.2-0.3		SB08_0.4-0.6		QA1	QA2	SB08_1.4-1.5								
Date	23/11/2018		23/11/2018		23/11/2018		23/11/2018		23/11/2018	23/11/2018	23/11/2018	23/11/2018	23/11/2018		23/11/2018				
Depth	0.7 - 0.8		1 - 1.1		0.2 - 0.3		0.4 - 0.6		0.4 - 0.6	0.4 - 0.6	0.4 - 0.6		1.4 - 1.5						
Sample Type	Normal		Normal		Normal		Normal		Field_D	Interlab_D	Normal								
Lab Report No.	629544		629544		629544		629544		629544	EM1818997	629544								
	Unit	EQL	Exceeds IWRG621 Category B Upper Limits (TC2)	Exceeds IWRG621 Category C Upper Limits (TC1)	Exceeds IWRG621 Fill Material Upper Limits (TC0)														
1,2,3-Trichloropropane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
1,2-Dichloroethane	mg/kg	0.02				<0.5	-	-	-	-	-	-	-	-	-	-			
1,2-Dichloropropane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Bromochloromethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Bromodichloromethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Bromofom	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Carbon Tetrachloride	mg/kg	0.01				<0.5	-	-	-	-	-	-	-	-	-	-			
Chlorodibromomethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Chloroethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Chlorofom	mg/kg	0.02				<0.5	-	-	-	-	-	-	-	-	-	-			
Chloromethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
cis-1,2-Dichloroethene	mg/kg	0.01				<0.5	-	-	-	-	-	-	-	-	-	-			
Dibromomethane	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
cis-1,3-Dichloropropene	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Dichloromethane	mg/kg	0.4				<0.5	-	-	-	-	-	-	-	-	-	-			
Hexachlorobutadiene	mg/kg	0.02	11	2.8		<0.5	-	-	-	-	-	-	-	-	-	-			
Tetrachloroethene	mg/kg	0.02				<0.5	-	-	-	-	-	-	-	-	-	-			
trans-1,2-Dichloroethene	mg/kg	0.02				<0.5	-	-	-	-	-	-	-	-	-	-			
trans-1,3-Dichloropropene	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Trichloroethene	mg/kg	0.02				<0.5	-	-	-	-	-	-	-	-	-	-			
Vinyl Chloride	mg/kg	0.02	4.8	1.2		<0.5	-	-	-	-	-	-	-	-	-	-			
Total Chlorinated Hydrocarbons	mg/kg	0.01			1	<0.5	-	-	-	-	-	-	-	-	-	-			
Total Other Chlorinated Hydrocarbons	mg/kg	0.01	50	10		<0.5	-	-	-	-	-	-	-	-	-	-			
Halogenated Phenols																			
2,4,5-Trichlorophenol	mg/kg	0.05				<1	-	-	-	-	-	-	-	-	-	-			
2,4,6-Trichlorophenol	mg/kg	0.05				<1	-	-	-	-	-	-	-	-	-	-			
2,4-Dichlorophenol	mg/kg	0.03				<0.5	-	-	-	-	-	-	-	-	-	-			
2,6-Dichlorophenol	mg/kg	0.03				<0.5	-	-	-	-	-	-	-	-	-	-			
2-Chlorophenol	mg/kg	0.03				<0.5	-	-	-	-	-	-	-	-	-	-			
Pentachlorophenol	mg/kg	0.2				<1	-	-	-	-	-	-	-	-	-	-			
2,3,5,6-Tetrachlorophenol	mg/kg	0.03				-	-	-	-	-	-	-	-	-	-	-			
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-			
Tetrachlorophenols	mg/kg	1				<1	-	-	-	-	-	-	-	-	-	-			
Phenols (Halogenated)	mg/kg	0.03	320	10	1	-	-	-	-	-	-	-	-	-	-	-			
Phenols (Total Halogenated)	mg/kg	1				<1	-	-	-	-	-	-	-	-	-	-			
Organochlorine Pesticides																			
a-BHC	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
b-BHC	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
d-BHC	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
g-BHC (Lindane)	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Aldrin	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Dieldrin	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Aldrin + Dieldrin	mg/kg	0.03	4.8	1.2		<0.05	-	-	-	-	-	-	-	-	-	-			
Chlordane	mg/kg	0.03	16	4		<0.1	-	-	-	-	-	-	-	-	-	-			
DDT	mg/kg	0.05				<0.05	-	-	-	-	-	-	-	-	-	-			
4,4-DDE	mg/kg	0.05				<0.05	-	-	-	-	-	-	-	-	-	-			
DDD	mg/kg	0.05				<0.05	-	-	-	-	-	-	-	-	-	-			
DDT+DDE+DDD	mg/kg	0.05	50	50		<0.05	-	-	-	-	-	-	-	-	-	-			
Endosulfan I	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Endosulfan II	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Endosulfan sulfate	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Endrin	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Chlordane (cis)	mg/kg	0.03				-	-	-	-	-	-	-	-	-	-	-			
Chlordane (trans)	mg/kg	0.03				-	-	-	-	-	-	-	-	-	-	-			
Endrin aldehyde	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Endrin ketone	mg/kg	0.05				<0.05	-	-	-	-	-	-	-	-	-	-			
Heptachlor	mg/kg	0.03	4.8	1.2		<0.05	-	-	-	-	-	-	-	-	-	-			
Heptachlor epoxide	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Methoxychlor	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Toxaphene	mg/kg	1				<1	-	-	-	-	-	-	-	-	-	-			
Organochlorine Pesticides (EPAVic)	mg/kg	0.03			1	<0.1	-	-	-	-	-	-	-	-	-	-			
Other Organochlorine Pesticides (EPAVic)	mg/kg	0.03	50	10		<0.1	-	-	-	-	-	-	-	-	-	-			
Herbicides																			
Dinoseb	mg/kg	5				<20	-	-	-	-	-	-	-	-	-	-			
Fungicides																			
Hexachlorobenzene	mg/kg	0.03				<0.05	-	-	-	-	-	-	-	-	-	-			
Polychlorinated Biphenyls																			
Aroclor 1016	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1221	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1232	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1242	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1248	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1254	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
Aroclor 1260	mg/kg	0.1				<0.1	-	-	-	-	-	-	-	-	-	-			
PCBs (Sum of total)	mg/kg	0.1			2	<0.1	-	-	-	-	-	-	-	-	-	-			
Solvents																			
Methyl Ethyl Ketone (MEK)	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
4-Methyl-2-pentanone	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Acetone	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Allyl chloride	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			
Carbon disulfide	mg/kg	0.5				<0.5	-	-	-	-	-	-	-	-	-	-			

Comments
 #1 Soils with a pH value of 2 or less or a pH of 12.5 or more are considered to be Category A Prescribed Industrial Wastes.
 #2 Soils with a pH value of 4 or less or a pH of 9 or more are considered to be a Prescribed Industrial Waste.

Table 4: Soil Leachability Results vs IWRG Threshold Limits
M17003



			Location Code	SB01	SB03	SB05	SB06	SB07
			Field ID	SB01_0.4-0.5	SB03_0.3-0.4	SB05_0.2-0.3	SB06_0.2-0.3	SB07_1.0-1.1
			Date	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018
			Depth	0.4 - 0.5	0.3 - 0.4	0.2 - 0.3	0.2 - 0.3	1 - 1.1
			Sample Type	Normal	Normal	Normal	Normal	Normal
			Lab Report No.	631403	631403	631403	631403	631403
	Unit	EQL	Exceeds IWRG621 Category B Upper Limits (ASLP2)	Exceeds IWRG621 Category C Upper Limits (ASLP1)				
Physical Parameters								
pH of Leaching Fluid	pH Units	0.1			5.0	5.0	5.0	5.0
pH (Final)	pH Units	0.1			5.8	5.1	5.2	5.1
Metals								
Arsenic	mg/L	0.01	2.8	0.7	-	0.02	-	<0.01
Lead	mg/L	0.01	4	1	-	0.02	0.09	-
Nickel	mg/L	0.01	8	2	0.02	-	-	-
PAHs								
Benzo(a)pyrene	µg/L	1	4	1	-	-	-	<1



Appendix A: Title and Planning Records

FEIGL & NEWELL TITLE SEARCHERS					
Property Reference					
Alfred and Camden Street, St Kilda					
No.	Volume Folio	Registered Proprietors	Date	Status	
1	V.6274 F.720	Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	04.03.1971	History	
		Angela & George Giannaris (Labourer)	13.02.1968	History	
		Mary Greer	27.04.1967	History	
		Frederick Greer (Gentleman)	05.03.1964	History	
		Kathleen & Elsie Wells (Gentlewomen)	06.03.1951	History	
		Henry Zajac (Tailor)	29.03.1950	History	
		Nellie Yuille	03.01.1939	History	
		V.5861 F.090	Ivy Lovie (Spinster)	25.03.1935	History
		Hannah Parry (Spinster)	22.06.1934	History	
2	V.5928 F.437	Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	01.07.1970	History	
		Gisele & Alexander Varnai (Laborer)	22.03.1963	History	
		Henry Jones (Plumber)	19.06.1950	History	
		Barbara & Margaret Yuille	10.10.1934	History	
3	V.5968 F.409	Hannah Parry (Spinster)	22.06.1934	History	
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	14.12.1961	History	
		Mary Tesoriero (Saleswoman)	28.02.1956	History	
		Salvatore Tesoriero (Fruit Vendor)	21.04.1950	History	
4	V.2437 F.239	Nellie Yuille	03.12.1947	History	
		Isabella Barrett & Mary Leech (Spinsters)	14.06.1935	History	
		V.5861 F.092	Hannah Parry (Spinster)	22.06.1934	History
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	02.02.1962	History	
		Frederick Maishman (Lift Driver)	09.03.1961	History	
		Linda & Adrienne Maxwell	30.07.1953	History	
		William Maxwell (Agent)	10.02.1940	History	
		Violet Maxwell	08.1.1937	History	
		William Mumby (Carpenter)	14.07.1934	History	
5	V.3412 F.302	Harry Mumby (Decorator)	14.07.1934	History	
		Joseph Mumby (Teacher)	15.01.1900	History	
		Edward O'Donnell (Gentleman)	02.08.1892	History	
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	20.02.1973	History	
		Caterina Tesoriero	18.09.1967	History	
		Caterina & Vincenzo Tesoriero (Fruiterer)	15.06.1950	History	
		Neila Tiddy	20.01.1950	History	
		Albert Tonge (Confectioner)	19.05.1947	History	
		Albert Pittard (Master Baker), Olive Berkley & Frederick Henderson (Solicitor)	05.11.1937	History	
6	V.8945 F.008	John Pittard (Manager)	12.04.1923	History	
		Walter Huntsman (Manufacturer)	05.02.1923	History	
		Percival Runshow (Agent)	10.11.1922	History	
		Teresa Parkin	21.04.1910	History	
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	19.05.1972	History	
		V.5249 F.736	232 Carlisle Street Pty Ltd	13.04.1972	History
		L.D.E. Investments P/L	18.03.1970	History	
		Malka & Benjamin Rosenberg (Tailor)	03.02.1959	History	
		Audrey Harting	05.04.1951	History	
7	V.4883 F.528	Patrice Winder	01.02.1944	History	
		Ruth Minahan	08.04.1927	History	
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	09.08.1977	History	
		Ruth Brown	19.07.1977	History	
		John Taylor (Railway Employee)	19.01.1966	History	
		Harold Traeger (Railway Employee)	13.05.1950	History	
		John Parkin (Chemist)	01.07.1948	History	
		Jessie Cawkwell	03.03.1947	History	
		Clifford Turner (Piano Repairer)	22.06.1937	History	
8	V.3840 F.823	Leslie Maxwell (Medical Practitioner)	23.09.1930	History	
		Emilie Arliss	03.07.1924	History	
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	04.03.1971	History	
		Kathleen & Everest Corbett (Fur Flasher)	04.03.1971	History	
		Albert Pitman (Gentleman)	29.07.1964	History	
		Leonard Stephenson (Constable of Police)	26.06.1953	History	
		John Bourke (Solicitor) & Frederick Vockenshon (Butcher)	27.03.1927	History	
		Sarah Vockenshon	30.04.1917	History	
		Clara Duncan	21.10.1914	History	
9	V.11468 F.134	Port Phillip City Council	18.09.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	03.11.1966	History	
		Bk.697 No.427	George Niarkhos	03.11.1966	History
		Bk.697 No.426	Geogia Tollis	03.11.1966	History
		Bk.666 No.524	Arthur Etheridge	23.11.1961	History
		Bk.629 No.251	Sarah Murray	17.12.1954	History
		Bk.586 No.459	William Brook	23.12.1946	History
		Bk.582 No.341	John Reilly	14.02.1946	History
		Bk.509 No.223	George Vochenshon	12.03.1924	History
		Bk.323 No.531	Elizabeth Gardiner	12.05.1885	History
10	V.1732 F.339	Bk.312 No.660	Cornelius O'Neil	31.10.1883	History
		Port Phillip City Council	09.10.2013	Current	
		The Mayor Councillors And Citizens Of The City Of St Kilda	22.02.1962	History	
		Grace Greenslade	19.12.1951	History	
		Francis Greenslade (Farmer) & National Trustees Executors and Agency Company Of Australasia Ltd	08.07.1937	History	
		Emily Bevan	15.01.1906	History	
Adrian Akhurst (Accountant)	02.09.1885	History			



Co-ordinates of Plot Corners
 NW 323261,5807026
 SW 323266,5806830
 MGA Zone 55

Data Source: Vicmap Property
 0 5 10 15 20 25 30 35 40 45 50m
 Scale of Metres (1:800)

MGA Zone 55
 Melways - 2P H9 Vicroads - 78 H7
 Created 10:25 AM on Nov 13, 2018

Co-ordinates of Plot Corners
 NE 323571,5807032
 SE 323576,5806836
 MGA Zone 55

WARNING: No warranty is given as to the accuracy or completeness of this map. Dimensions are approximate. For property dimensions, undertake a Title search.

①

Historical Search

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:23 PM

Volume 6274 Folio 720

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 05861 Folio 090

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 29/04/2008 09:04:55 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
------------------------------	---------------------------	---------	--------	--------------------------

RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
22/11/2007	22/11/2007	AF484803R	Y

RECTIFICATION-PROPRIETOR NAME/ADDRESS

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA of CNR BRIGHTON ROAD & CARLISLE STREET ST KILDA VIC 3182

D977805 04/03/1971

09/10/2013	10/10/2013	AK643897B	Y
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RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

Volume 06274 Folio 720
124024128660Y
Produced 22/11/2007 08:38 am

LAND DESCRIPTION

Lot 1 on Title Plan 904522R (formerly known as part of Portion 147A Parish of Prahran).
PARENT TITLE Volume 05861 Folio 090
Created by instrument 1716772 03/01/1939

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA
D977805 04/03/1971

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE DIAGRAM ON IMAGED FOLIO VOLUME 6274 FOLIO 720 FOR FURTHER DETAILS AND BOUNDARIES

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Entered in the Register Book

PRAHRAN
128 189

Vol 6274 Fol 1254720

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1925."

ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

Mellie Alice Mills of 313 Carlisle Street East St.Kilda Married Woman is ---
now the proprietor of an Estate in Fee simple, subject to the Encumbrances
notified hereunder in All that piece of Land delineated and coloured
red on the map in the margin being part of Crown Portion One hundred and ---
forty-seven^A Parish of Prahran County of Bourke - Together with a right of access
transmission and enjoyment of light over the land colored yellow on the said map --
to the windows of any building now standing or hereafter to be erected on the said-
land colored red - - - - -

Dated the Third day of January One
thousand nine hundred and thirty-nine.

L. Forster
Assistant Registrar of Titles.
ENCUMBRANCES REFERRED TO



The Measurements are Metric and correct.



Y06274-720-1-0

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Both text and diagram for this Folio have been converted to a computer Folio.
FULLY CONVERTED TITLE

Vol. 5761 Fol. 1172890

Transfer. 1716772

Application.

Henry Baker of 12 Victoria Street
St Kilda is now the proprietor

Registered 24th March 1950.

and numbered 2291916.

18 1950

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF
ST. KILDA is now the proprietor
Registered 4th March 1971
No. D977805



MEMORANDUM
Commonwealth Bank of Australia
Registered
20th March 1951
6th March 1951
938206
Assistant Registrar of Titles

Kathleen Joan Wells and
Kelsie Vera Wells both of 70
Sutherland Road Armadale
and women are

proprietors of the within described estate by
transfer made on 6th March 1951
and numbered 23374211
Assistant Registrar of Titles

FREDERICK GREER of 5 Chamberlain Street Ashburton
Gentleman is now the proprietor
Registered 5th March 1964
No. B875170

CAVEAT No. 2925782 LODGED - 8 MAY 1968
CAVEAT LIFTED 23 FEB 1968

FREDERICK GREER died on 4th February 1967 Probate of
his Will has been granted to MARY JOYCE GREER of
Eleven A Jessamine Avenue Windsor Widow
Dated 27th April 1967
No C761065

GEORGE GIAMMARIS Labourer and ANGELA GIAMMARIS Married
Woman both of 43 Green Street Wincoboro are now JOINT
PROPRIETORS
Registered 13th February 1968
No. D2325

CITY OF ST. KILDA
has pursuant to section 57 of Transfer of Land Act
issued a Notification relating to the compulsory acquisition
of land comprising lot 11 R.
Dated 27 NOV 1969
Entered - 2 DEC 1969
D571968 (Shown with letter)

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TITLE PLAN	EDITION 1	TP 904522R
LOCATION OF LAND Parish: PRAHRAN Township: - Section: - Crown Allotment: - Crown Portion: 147A (PT) Last Plan Reference:- Derived From: VOL. 6274 FOL. 720 Depth Limitation: NIL	Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN	

Description of Land/Easement Information

Together with a right of access

transmission and enjoyment of light over the land colored yellow on the said map --
 to the windows of any building now standing or hereafter to be erected on the said-
 land colored red - - - - -

THIS PLAN HAS BEEN PREPARED BY
 LAND REGISTRY, LAND VICTORIA FOR
 TITLE DIAGRAM PURPOSES

COMPILED: Date: 23.04.2008.
 VERIFIED: A. DALLAS
 Assistant Registrar of Titles

COLOUR CODE
 R= RED
 Y= YELLOW

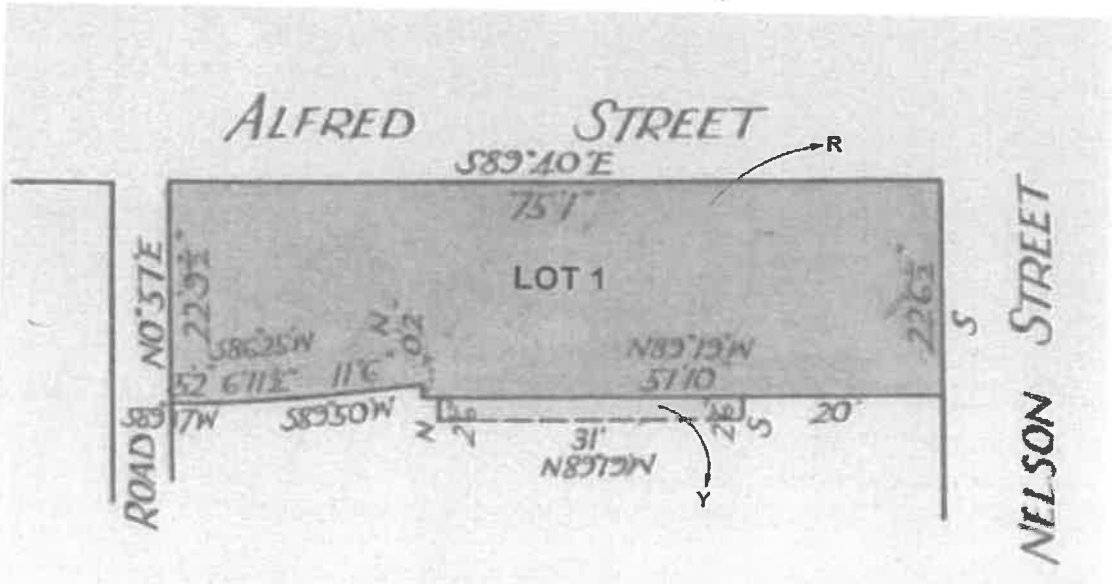


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
LOT 1 = CP. 147A (PT)

Entered in the Register

CANCELLED



Vol 5861 Fol 1172090

VICTORIA.

Certificate of Title

UNDER THE "TRANSFER OF LAND ACT 1928."

PARCELS INDEX
SECONDARY STORAGE

ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

Mrs. Helen Perry
20/11/18
18/11/18

Ry

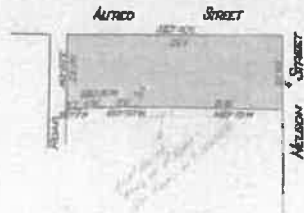
Manak Helen Perry of 52 Electro Street Williamstown in the County of Bourke spinster in-
now the proprietor of an Estate in Fee simple subject to the Encumbrances - - - -
notified hereunder in All that piece of Land delineated and coloured - - - -
red on the map in the margin containing Six perches and three-tenths of a perch or thereabouts
being part of Crown Portion One hundred and forty-seven¹ Parish of Frazer County of Bourke -

Delivered
on-line by
LANDATA®

IMAGED FOLIO - WARNING: TO BE USED FOR DIAGRAM, EASEMENT
INFORMATION, DEPTH LIMITATIONS AND ANY DIAGRAM NOTATIONS.
The text of this Folio has been converted to a computer Folio and the effect of any
dealing registered since the text conversion will appear in the computer Folio.

Dated the Twenty-second
day of June
thousand nine hundred and thirty-four.

One
Assistant Registrar of Titles.
ENCUMBRANCES REFERRED TO.



TDS861-090-1-7

Vol.

Fol.

Transfer.

Application. 48794

Mrs Elizabeth Ellen Kovie of 41 Bluff Street Black Rock Spunster is

now the proprietor of the within described estate by
Transfer *25th March 1936*
and numbered 1573831

25

Assistant Registrar of Titles

TRANSFER to

Nellie Alice Yuille

registered

on *3rd January 1939* numbered *111/772*

CANCELLED See Certificate of Title

Vol. 0274 Fol. 1254720 *La For has*

Assistant Registrar of Titles

CANCELLED

15 APR 1939

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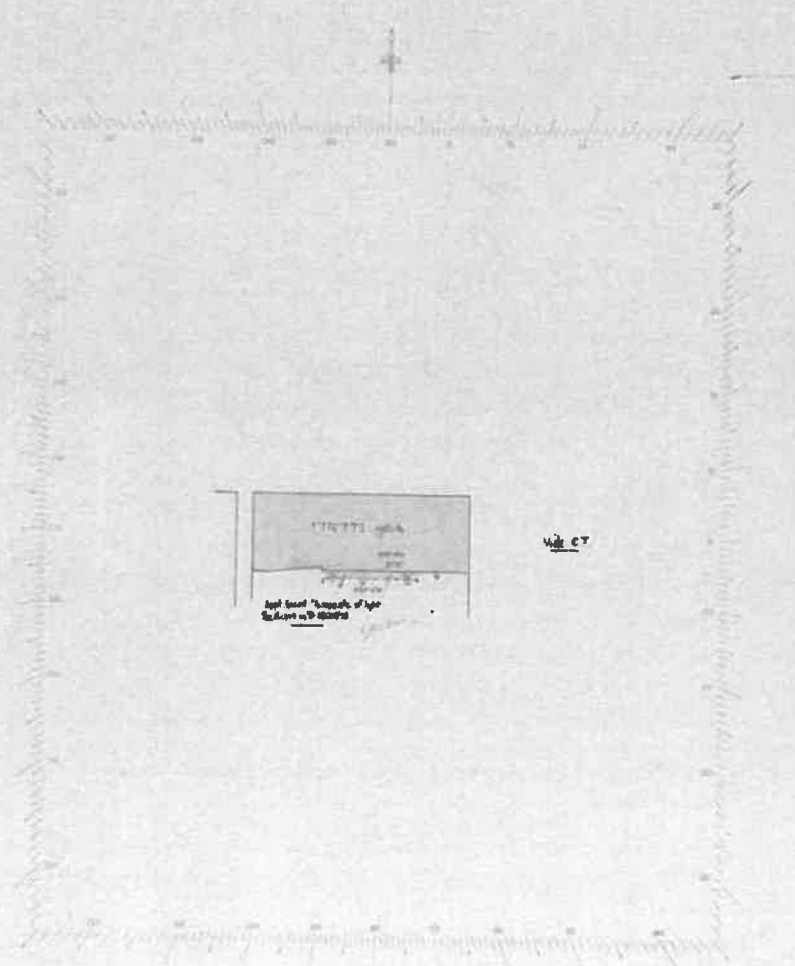
SCALE 30' to 1" inch

1/4" = 30'

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W. E. Y.



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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:23 PM

Volume 5928 Folio 437

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 05861 Folio 091

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 03/09/2002 05:01:26 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
09/10/2013	10/10/2013	AK643897B	Y

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

VOLUME 05928 FOLIO 437
124047702458F
Produced 10/10/2013 10:55 am

LAND DESCRIPTION

Lot 1 on Title Plan 232252P (formerly known as part of Portion 147A Parish of Prahran).

PARENT TITLE Volume 05861 Folio 091

Created by instrument 1560978 10/10/1934

REGISTERED PROPRIETOR

Estate Fee Simple

Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA OF THE TOWN HALL
ST KILDA

D761839 01/07/1970

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP232252P FOR FURTHER DETAILS AND BOUNDARIES

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PRARRAN
 128 190

Entered in the Register Book



Vol. 5928 Fol. 1185437

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1928."

ORIGINAL CERTIFICATE.
 Not to be dealt with outside the Titles Office.

Margaret Yuille an infant who attained the age of 12 years on the 31st day of March 1934 and Barbara Yuille an infant who attained the age of 10 years on the 16th day of December 1933 both of 313 Carlisle Street Malacolava are now joint proprietors *of an Estate in Fee simple, subject to the Encumbrances notified hereunder in All that piece of Land delineated and coloured red and blue on the map in the margin being part of Crown Portion One hundred and forty-seven^A Parish of Prahran County of Bourke*

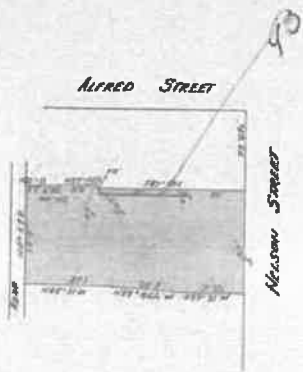
Delivered on-line by LANDATA®
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 Both text and diagram for this Folio have been digitally converted to a computer folio.

Dated the *Tenth* day of *October* *One* thousand nine hundred and thirty-four.

J. McLennon
 Assistant Registrar of Titles



ENCUMBRANCES REFERRED TO,
 AS to the land colored blue ---
 THE RESERVE as to light reserved by Instrument of transfer No. 196978 in the Register Book



554-091



705928-437-1-1

J.M.
 76

Vol. 546 Fol. 1172091

Transfer. 1560975

Application.

Harry Thomas (now 751
Nelson Street St. Kilda
number 11

now the proprietor of the within described estate by
transfer registered on 19th June 1950
inc number 1115265 *Hewson*

CAVEAT NO. 824692 LODGED 20 APR 1961

CAVEAT LAPSED 26 APR 1963

ALEXANDER VANWAI Laborer and GISELE VANWAI Married
Woman both of 51 Nelson Street St. Kilda are now JOINT
PROPRIETORS

Registered 22nd March 1963
No. 8622172



THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF
ST. KILDA of The ^{Town} ~~City~~ Hall St. Kilda is now the
proprietor

Registered 1st July 1970
No. 2761839



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on-line by
LANDATA® Both text and diagram for this Folio have been fully converted to a computer Folio.
FULLY CONVERTED TITLE
THIS IS A SUPERSEDED FOLIO OF THE REGISTER.

TITLE PLAN	EDITION 1	TP 232252P
-------------------	------------------	-------------------

Location of Land Parish: PRAHRAN Township: Section: Crown Allotment: Crown Portion: 147A(PT) Last Plan Reference: Derived From: VOL 5928 FOL 437 Depth Limitation: NIL	Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN
---	---

<p style="text-align: center;">Description of Land / Easement Information</p> <p style="text-align: center;">ENOUMBRANCES REFERRED TO.</p> <p>As to the land colored blue ---</p> <p>THE EASEMENT as to light reserved by Instrument of Transfer No.1560978 in the Register Book---</p>	THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 30/11/1999 VERIFIED: GB
--	--

COLOUR CODE
 BL = BLUE

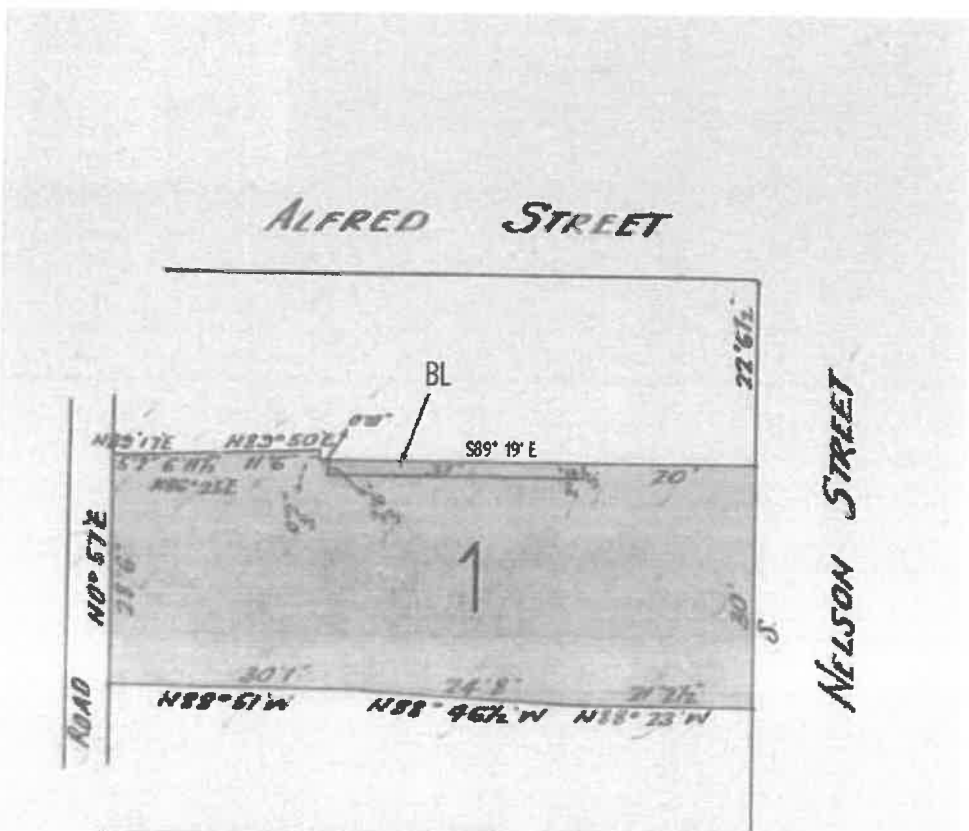


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = CP 147A (PT)

Entered in the Register Book

CANCELLED

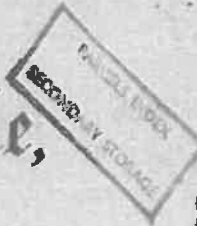


Vol. 5861 Fol. 1172091

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1928."



Delivered on-line by LANDATA®

IMAGED FOLIO - WARNING: TO BE USED FOR DIAGRAM, EASEMENT INFORMATION, DEPTH LIMITATIONS AND ANY DIAGRAM NOTATIONS.

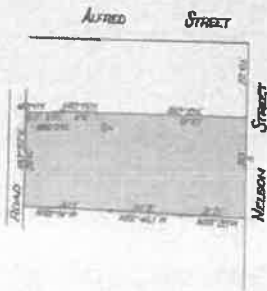
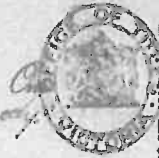
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ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

Hannah Helen Perry of 52 Electra Street, Williamstown in the County of Bourke Spinster is now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in *All that piece of Land, delineated and coloured* red on the map in the margin containing Eight perches and two-tenths of a perch or thereabouts being part of Crown Portion One hundred and forty-seven^A Parish of Frankston County of Bourke

Dated the *twenty-second* day of *June* *thousand nine hundred and thirty-four.*

Lucretia
Assistant Registrar of Titles.
ENCUMBRANCES REFERRED TO.



T05861-081-1-3

The Encumbrances referred to are as follows

Vol.

Fol.

Transfer.

Application 48744

TRANSFER to *Margaret Guille
and Barbara Guille*

10 October 1954 registered
numbered *1560979*

CANCELLED See Certificate of Title

V. 5028 Fol. 1185137

J. M. [Signature]

CANCELLED

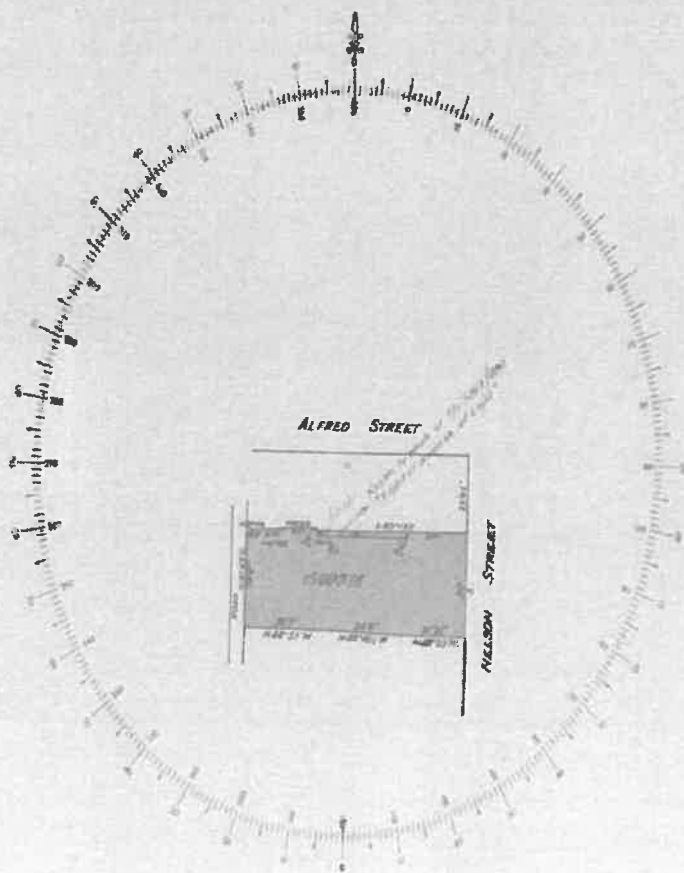
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SCALE: *30 feet* to one inch.

Vol. 5861 fol. 0371



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21/11/14

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 05/12/2018 07:49 AM

Volume 5968 Folio 409

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 05861 Folio 092

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 03/09/2002 05:01:26 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
09/10/2013	10/10/2013	AK643897B	Y

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

VOLUME 05968 FOLIO 409
124047702460D
Produced 10/10/2013 10:55 am

LAND DESCRIPTION

Lot 1 on Title Plan 245869W (formerly known as part of Portion 147A Parish of Prahran).
PARENT TITLE Volume 05861 Folio 092
Created by instrument 1581058 14/06/1935

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA
B334946 14/12/1961

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP245869W FOR FURTHER DETAILS AND BOUNDARIES

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Entered in the Register Book

PRARRAN
Word 28, PAGE 191

Vol 5968 Fol 1193409



VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1928."

1935

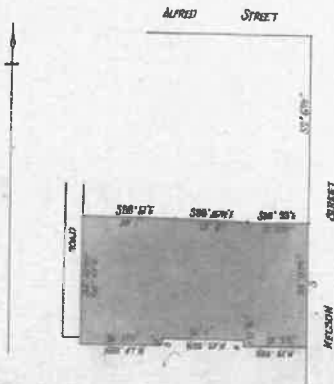
Isabella Lucy Barrett and Mary Cecilia Leech both of 13 McWhae Avenue Ripponlea --
Spinsters are now joint proprietors
joint proprietors of an Estate in Fee-simple, subject to the Encumbrances
notified hereunder in *All the piece of Land delineated and coloured*
red on the map in the margin being part of Crown Portion One hundred and forty-seven
Parish of Prahran County of Bourke

ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

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FULLY CONVERTED TITLE
THIS IS A SUPERSEDED FOLIO OF THE REGISTER.

Dated the *fourteenth* day of *June*
thousand nine hundred and thirty-five.

C. Haacose
Assistant Registrar of Titles.
ENCUMBRANCES REFERRED TO.



T05968-409-1-7

S. H. H.
The Government of Victoria

Vol. 1101 Fol. 1172092

Transfer. 1351165

Application.

NOT BOOK
 DISCHARGE
 registered
 numbered 727129
 Assistant Registrar of Titles

registered
 numbered 810516
 Assistant Registrar of Titles

Yellie Alice Yulle of 313
 Carlisle Street East St. Kilda
 married woman
 now the proprietor of the within described estate by
 transfer registered on 3rd December 1947
 and numbered 2113999
 Assistant Registrar of Titles

Salvatore Jesonero of 268 Carlisle Street St Kilda
 Fruit Vendor is
 now the proprietor of the within described estate by
 transfer registered on 21st April 1950
 and numbered 2337425
 Assistant Registrar of Titles

Mary Jesonero of 268 Carlisle
 Street St. Kilda, Saleswoman is
 now the proprietor of the within described estate by
 transfer registered on 28 FEB 1956
 and numbered A118724
 Assistant Registrar of Titles

Does not affect
 USING CONVEYANCE Act 1938
 Section 2 of Stamp
 Act 1938 and Housing Act 1938
 affecting land herein
 - 7 MAY 1965

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF
 ST. KILDA is now the proprietor by
 Transfer B334946
 Registered 14th December 1961



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TITLE PLAN		EDITION 1	TP 245869W
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Location of Land Parish: PRAHRAN Township: Section: Crown Allotment: 147A (PT) Crown Portion: Last Plan Reference: Derived From: VOL 5968 FOL 409 Depth Limitation: NIL	Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN
--	---

Description of Land / Easement Information	THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 15/12/1999 VERIFIED: C.L.
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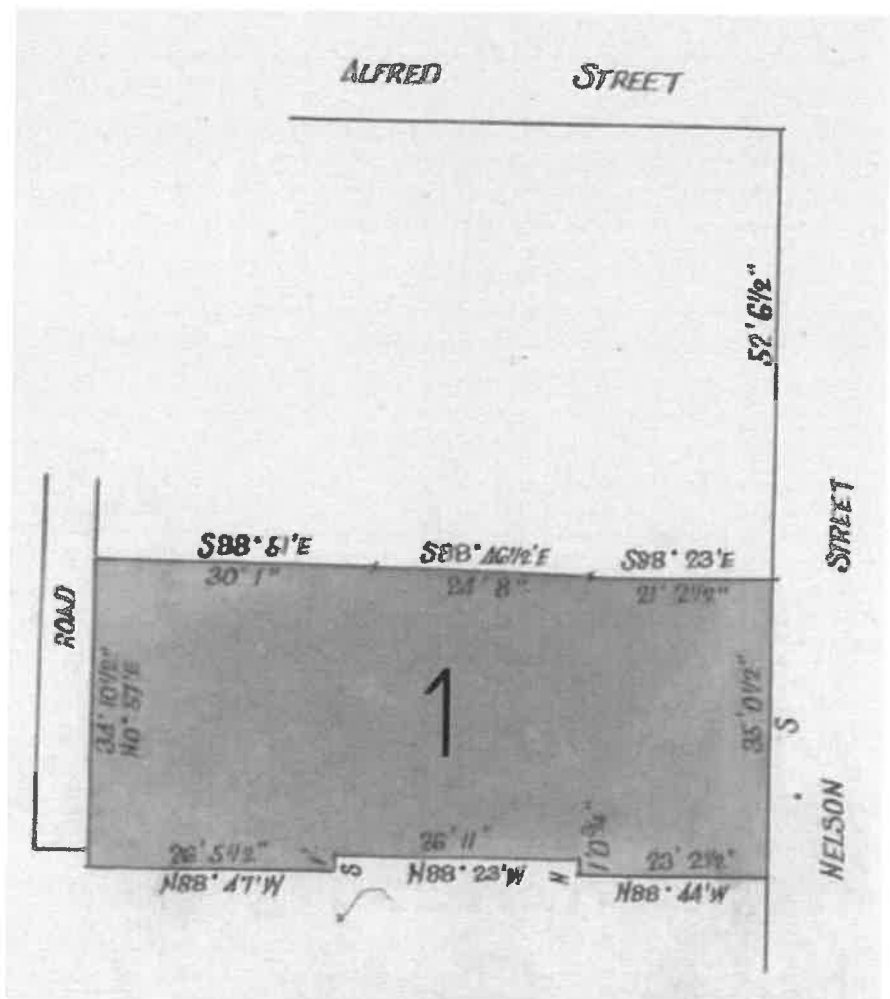


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962 PARCEL 1 = CP 147A (PT)

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CANCELLED

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Vol. 5861 Fol. 1172092

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1928."



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ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

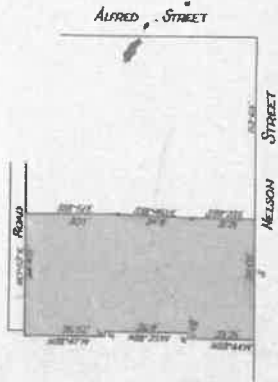
Hannah Helen Parry of 52 Electra Street Williamstown in the County of Bourke Spinster is now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in *All that piece of Land, delineated and coloured...* red on the map in the margin containing Nine perches and eight-tenths of a perch or thereabouts being part of Crown Portion One hundred and forty-seven^A Parish of Prahran-County of Bourke

Dated the *Twenty-second* day of *June* *One* thousand nine hundred and thirty-four.

L. Kennedy
Assistant Registrar of Titles.

ENCUMBRANCES REFERRED TO.

THE RIGHTS of Richard Veredon Mitchell and Sylvia Mitchell the purchasers under Contract of Sale dated the 9th December 1932 and numbered 511476 in the Record Book in the Office of Titles



T05861-092-1-0

The above is a full and correct copy

Vol.

Fol.

Transfer.

Application 487/14

TRANSFER to *Sabilla Lucy Barrett*
And Maribella Leich

registered

on *14th June 1935* numbered *1551/35*

CANCELLED See Certificate of Title

5968 Fol. *1193109* *A. H. Hooper*

Assistant Registrar of Titles

CANCELLED

✓

Delivered
on-line by
LANDATA®

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 2437 Folio 239

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 02340 Folio 814

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 16/10/2002 05:00:03 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
22/11/2007	22/11/2007	AF486778B	Y

RECTIFICATION-PROPRIETOR NAME/ADDRESS

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA of CNR BRIGHTON ROAD & CARLISLE STREET ST KILDA VIC 3182

B358376 02/02/1962

09/10/2013	10/10/2013	AK643897B	Y
------------	------------	-----------	---

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

Volume 02437 Folio 239
124024143266X
Produced 22/11/2007 04:56 pm

LAND DESCRIPTION

Lot 1 on Title Plan 748693E (formerly known as part of Portion 147A AT SAINT
KILDA Parish of Prahran).
PARENT TITLE Volume 02340 Folio 814
Created by instrument 686588R 02/08/1892

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST.KILDA
B358376 02/02/1962

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP748693E FOR FURTHER DETAILS AND BOUNDARIES

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Entered in the Register Book

Vol 2487 No 487239



VICTORIA.

Certificate of Title

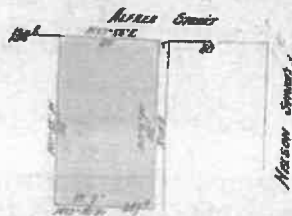
UNDER THE "TRANSFER OF LAND ACT 1890."

Edward C. Donnell of Attorney at Law and Public Auctioneer
now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in All three pieces of Land, delineated and colored red on the Map in the margin, being part of Crown Land on hundred and four acres of 4000 Acres less a parcel of 100 Acres of Area.

ORIGINAL CERTIFICATE.
Not to be dealt with outside the Titles Office.

Dated the second _____ day of August _____ One thousand
eight hundred and ninety six

A. W. Johnston
Assistant Registrar of Titles
ENCUMBRANCES REFERRED TO.



T02437-239-1-6

LANDATA®

Vol. 2340 Fil. 467811 Transfer R 106858 Application

Name of the Vendor	Day and Hour of its Production	Name of the Parties to it	Number or Symbol of the Title
<p><i>Joseph Murnby of Pomboonee State School Teacher</i></p> <p>was the proprietor of the within described Estate and Land by Transfer from the named <i>The Commercial Bank of Australia Limited</i> registered on the <i>15th day of January 1901</i> at <i>11:30 o'clock</i> in the forenoon, and numbered <i>16763</i></p> <p><i>Joseph Murnby</i> died <i>30th March 1944</i> Probate of his Will has been granted to <i>Thomas Street Melbourne</i> Director</p> <p><i>10th July 1944</i></p> <p><i>William Frederick Murnby of 179 Brighton Road</i> is now the proprietor of the within described estate and transfer registered on <i>11th July 1934</i> and numbered <i>155335</i></p>	<p><i>The 21st day of July, 1928, at 1.21 p.m.</i></p>	<p><i>Edward O'Donnell</i> to <i>The Commercial Bank of Australia Limited.</i></p> <p><i>W. Andrews</i> Assistant Registrar of Titles.</p> <p><i>16763</i></p> <p><i>10th February 1940.</i></p> <p><i>15th July 1934</i></p>	<p><i>149831</i></p>
<p><i>Frederick George Battenham of 2 Alfie Street St. Kilda</i> is now the proprietor of the within described estate by transfer registered on <i>21st October 1937</i> and numbered <i>1665717</i></p>	<p><i>22nd</i></p>	<p><i>Red Book No. 2422961</i></p> <p><i>WILLIAM ARTHUR HERBERT MAXWELL</i> died on <i>14 August 1952</i> Probate of his Will has been granted to <i>LINDA MARIE MAXWELL</i> widow and <i>ADRIENNE ISOBEL MAXWELL</i> daughter both of <i>11 Stonnington Place</i> Victoria. DATED <i>30th July 1953.</i></p>	<p><i>2422961</i></p>
<p><i>THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA</i> is now the proprietor by transfer <i>B.358376</i> registered <i>2nd February 1962.</i></p>	<p>registered numbered <i>713276</i></p>	<p><i>22nd</i></p>	<p><i>713276</i></p>

DOES NOT NOW AFFORD PROTECTION UNDER THE TRANSFER ACT 1924

Delivered on-line by LANDATA® Both text and drawings for the Folio have been fully converted to a computer Folio. FULLY CONVERTED TITLE

DISCHARGED
 16 JUN 1953



TITLE PLAN		EDITION 1	TP 748693E
-------------------	--	------------------	-------------------

<p>Location of Land</p> <p>Parish: AT ST. KILDA PARISH OF PRAHRAN</p> <p>Township:</p> <p>Section:</p> <p>Crown Allotment:</p> <p>Crown Portion: 147A (PT)</p> <p>Last Plan Reference:</p> <p>Derived From: VOL 2497 FOL 239</p> <p>Depth Limitation: NIL</p>	<p>Notations</p> <p>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN</p>
--	--

<p>Description of Land / Easement Information</p>	<p>THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT</p> <p>COMPILED: 04/10/2002</p> <p>VERIFIED: DA</p>
--	---

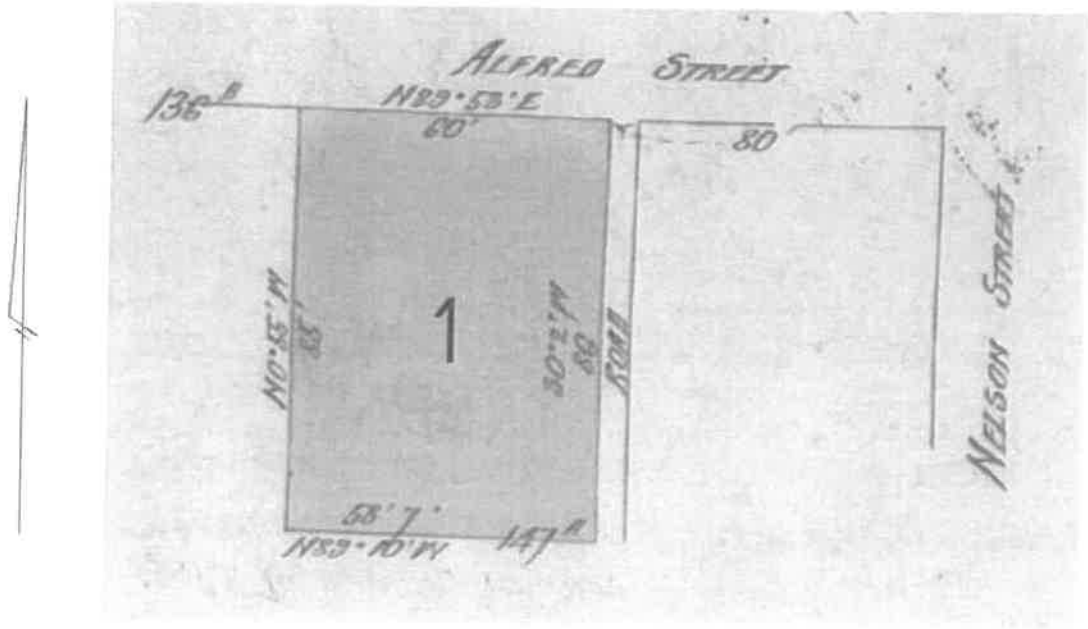


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = CP 147A (PT)

5

Historical Search

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 3412 Folio 302

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 03378 Folio 581

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 27/02/2008 08:04:04 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
15/09/2004	15/09/2004	AD116507V	Y

RECTIFICATION LAND REFER TO INSTRUMENT

Conversion History

Lot 1 on Title Plan 846586J (formerly known as part of Crown Allotment B Portion 136 Parish of Prahran).

PARENT TITLE Volume 03378 Folio 581

Created by instrument 0618434 21/04/1910

09/10/2013	10/10/2013	AK643897B	Y
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RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

Volume 03412 Folio 302
124011739998L
Produced 15/09/2004 12:15 pm

LAND DESCRIPTION

Lot 1 on Title Plan B46586J (formerly known as part of Crown Allotment B
Portion 136 Parish of Prahran).
PARENT TITLE Volume 03378 Folio 581
Created by instrument 0618434 21/04/1910

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA
E709898 20/02/1973

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE DIAGRAM ON IMAGED FOLIO VOLUME 3412 FOLIO 302 FOR FURTHER DETAILS AND
BOUNDARIES

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Entered in the Register Book,

78112 Vol. 682302



VICTORIA.

FRANKLIN
128 187

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1990"

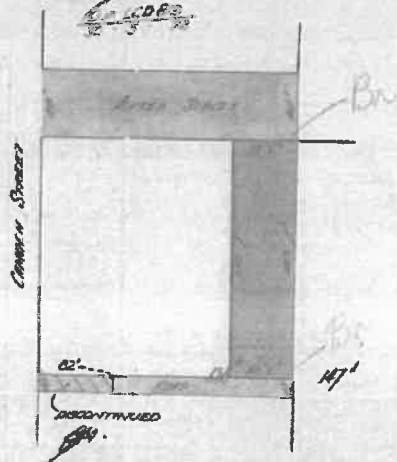
A.O. IN AD 115507V RR
15-09-04

24/ Teresa Parkin s/o. 12248 Rathdowny Street West Carlton, Victoria
is the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in All that piece of Land, delineated and coloured red on the map in the margin, being part of Crown allotment B Portion one hundred and thirty six RR Parish of Franklin, ~~East of St. Peter's~~ County of Bourke together with a right of carriage way over the road coloured brown on the said map.

ORIGINAL CERTIFICATE
Not to be dealt with outside the Titles Office.

Dated the Twenty First day of April One thousand nine hundred and ten

M. A. King
Assistant Registrar of Titles
ENCUMBRANCES REFERRED TO.



WARNING-THE IMAGE OF THIS CERTIFICATE OF TITLE HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL CERTIFICATE OF TITLE

DUPLICATE AMENDED
ASSISTANT REGISTRAR OF TITLES
TO REMAIN VALID BE REGISTERED UNTIL FULLY PAID AND ON DUPLICATE

Delivered
or
by
LANDATA
FULLY CONVERTED TITLE
THIS IS A REGISTERED COPY OF THE REGISTER
and diagram for this title have been fully converted to a computer file

Vol. 337 & Vol. 675581

Transfer 618434

Application

Number of Instruments	Day and Hour of its Production	Names of the Parties to it	Number or Symbol thereon
	<p>25 April 1910 at 12:32 pm</p>	<p>Teresa Parkin to Colon Gray Assistant Registrar of Titles.</p>	282175
<p>Perceval Wallace Punshon 9229 Fitzroy Street, St Kilda, Estate Account of the within described estate transfer from Teresa Parkin registered on 10th November 1932 and numbered 1075518 Assistant Registrar of Titles.</p>	<p>10th November 1932</p>	<p>Mala Biddy of Trustbank Vernie Springvale Married woman is now the proprietor of the within described estate by transfer registered on 10th January 1932 and numbered 2272565 Assistant Registrar of Titles.</p>	
<p>Walter Benjamin Huntman 251 Chapel Street, Melbourne, Manufacturer the proprietor of the within described estate transfer from Perceval Wallace Punshon registered on 5 February 1923 and numbered 1087973 Assistant Registrar of Titles.</p>	<p>5 February 1923</p>	<p>Vincenzo Tesoriero Fruitier and Caterina Tesoriero Married Woman both of 268 Cordale Street are now joint proprietors of the within described estate by transfer registered on 15th June 1950 and numbered 2332361 Assistant Registrar of Titles.</p>	
<p>John Henry Pittard of Carlisle Street Balclutha Manager is the proprietor of the within described estate transfer from Walter Benjamin Huntman registered on 1st April 1923 and numbered 1098267 Assistant Registrar of Titles.</p>	<p>1st April 1923</p>	<p>CATERINA TESORIERO is now the SURVIVING PROPRIETOR Registered 18th September 1967 No. C887532 Assistant Registrar of Titles.</p>	
<p>JOHN HENRY PITTARD (herein called John Henry Pittard) died - on 8th April 1937. Probate of his Will has been granted to ALBERT JOHN PITTARD of 318 Inverness Street St. Kilda, Walter Baker and OLIVE BENTLEY - of 227 Carlisle Street Balclutha, Widow and ALAN BERNARD HENDERSON of 501 Little Collins Street - Melbourne Solicitor. 5th November 1937. Assistant Registrar of Titles.</p>	<p>5th November 1937</p>	<p>THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA is now the proprietor Registered 20th February 1973 No. 2709898 Assistant Registrar of Titles.</p>	
<p>Albert Norman Tonge of 115 Donmond Street Balclutha Manufacturer is now the proprietor of the within described estate by transfer registered on 19 May 1949 and numbered 2052589 Assistant Registrar of Titles.</p>	<p>19 May 1949</p>	<p>Assistant Registrar of Titles.</p>	

Delivered on-line by LANDATA®
 Board of Titles
 21. 11. 2017
 FULLY CONVERTED TITLE
 THIS IS A SUPERSEDED FOLIO OF THE REGISTER.
 Board of Titles
 21. 11. 2017

RECEIVED
 25 APR 1910
 12:32 PM

RECEIVED
 10 NOV 1932

RECEIVED
 5 FEB 1923

RECEIVED
 1 APR 1923

RECEIVED
 5 NOV 1937

RECEIVED
 19 MAY 1949

RECEIVED
 18 SEP 1967

RECEIVED
 20 FEB 1973

TITLE PLAN	EDITION 1	TP 846586J						
LOCATION OF LAND Parish : PRAHRAN Township : - Portion : 136 Crown Allotment : B (PT) Last Plan Reference : - Derived From : VOL.3412 FOL.302 Depth Limitation : NIL	Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN							
Description of Land/ Easement Information TOGETHER WITH A RIGHT OF CARRIAGEWAY OVER THE ROADS COLOURED BROWN ON THE SAID MAP		THIS PLAN HAS BEEN PREPARED BY LAND REGISTRY, LAND VICTORIA FOR TITLE DIAGRAM PURPOSES COMPILED: Date: 26/02/08 VERIFIED: A DALLAS <i>Assistant Registrar of Titles</i>						
		COLOUR CODE BL=BLUE G=GREEN BR=BROWN P=PURPLE Y=YELLOW R=RED						
<table border="1" style="margin: auto;"> <tr> <th colspan="2">TABLE OF PARCEL IDENTIFIERS</th> </tr> <tr> <td colspan="2">WARNING: Where multiple parcels are referred to or shown on the Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td> </tr> <tr> <td colspan="2">LOT 1 = CROWN ALLOTMENT B (PT)</td> </tr> </table>			TABLE OF PARCEL IDENTIFIERS		WARNING: Where multiple parcels are referred to or shown on the Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962		LOT 1 = CROWN ALLOTMENT B (PT)	
TABLE OF PARCEL IDENTIFIERS								
WARNING: Where multiple parcels are referred to or shown on the Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962								
LOT 1 = CROWN ALLOTMENT B (PT)								
LENGTHS ARE IN FEET & INCHES	Metres = 0.3048 x Feet © Metres = 0.201168 x Links	Sheet 1 of 1 Sheets						

6

Historical Search

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 8945 Folio 008

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 05249 Folio 736

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 28/09/2002 05:00:06 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details

RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
09/10/2013	10/10/2013	AK643897B	Y

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

VOLUME 08945 FOLIO 008
124047702522L
Produced 10/10/2013 10:56 am

LAND DESCRIPTION

Lot 1 on Title Plan 438679C (formerly known as part of Crown Allotment B
Portion 136 Parish of Prahran).
PARENT TITLE Volume 05249 Folio 736
Created by instrument E395368 19/05/1972

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA
E395368 19/05/1972

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP438679C FOR FURTHER DETAILS AND BOUNDARIES

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NOT TO BE TAKEN FROM THE OFFICE
OF TITLES



VICTORIA

REGISTER BOOK

VOL. 8945 FOL. 008

Certificate of Title

PRAHRAN
INDEX 128 FOLIO 185

UNDER THE "TRANSFER OF LAND ACT"

VOL. 8945. FOL. 008

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA is now the --
 proprietor of an estate in fee simple subject to the encumbrances notified-
 hereunder in ALL THAT piece of land delineated and coloured red on the map-
 in the margin being part of Crown Allotment B Portion 136 Parish of ---
 Prahran County of Bourke Together with a right of carriageway over the --
 roads coloured brown on the said map - - - - -

Delivered
on-line by
LANDATA®

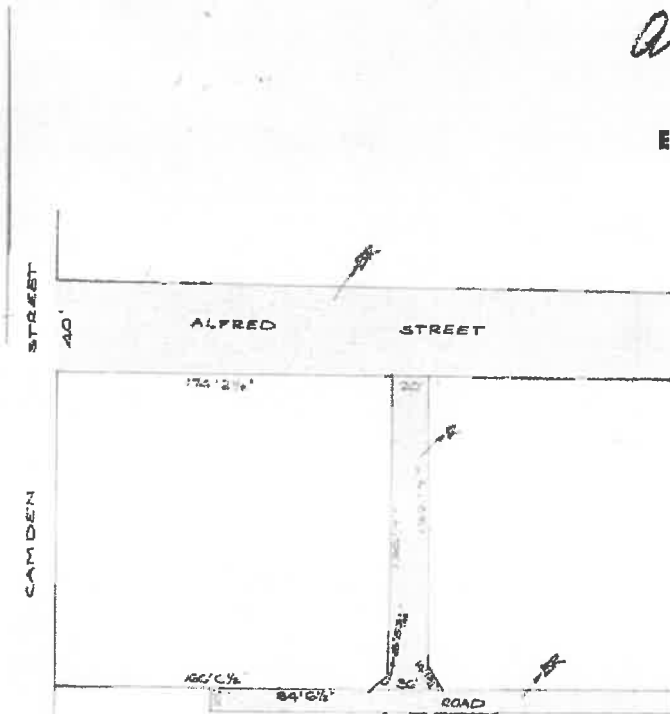
THIS IS A SUPERSEDED FOLIO OF THE REGISTER.
Both text and diagram for this title have been fully converted to a computer file.

DATED the 19th day of May 1972

A Hamilton
Assistant Registrar of Titles



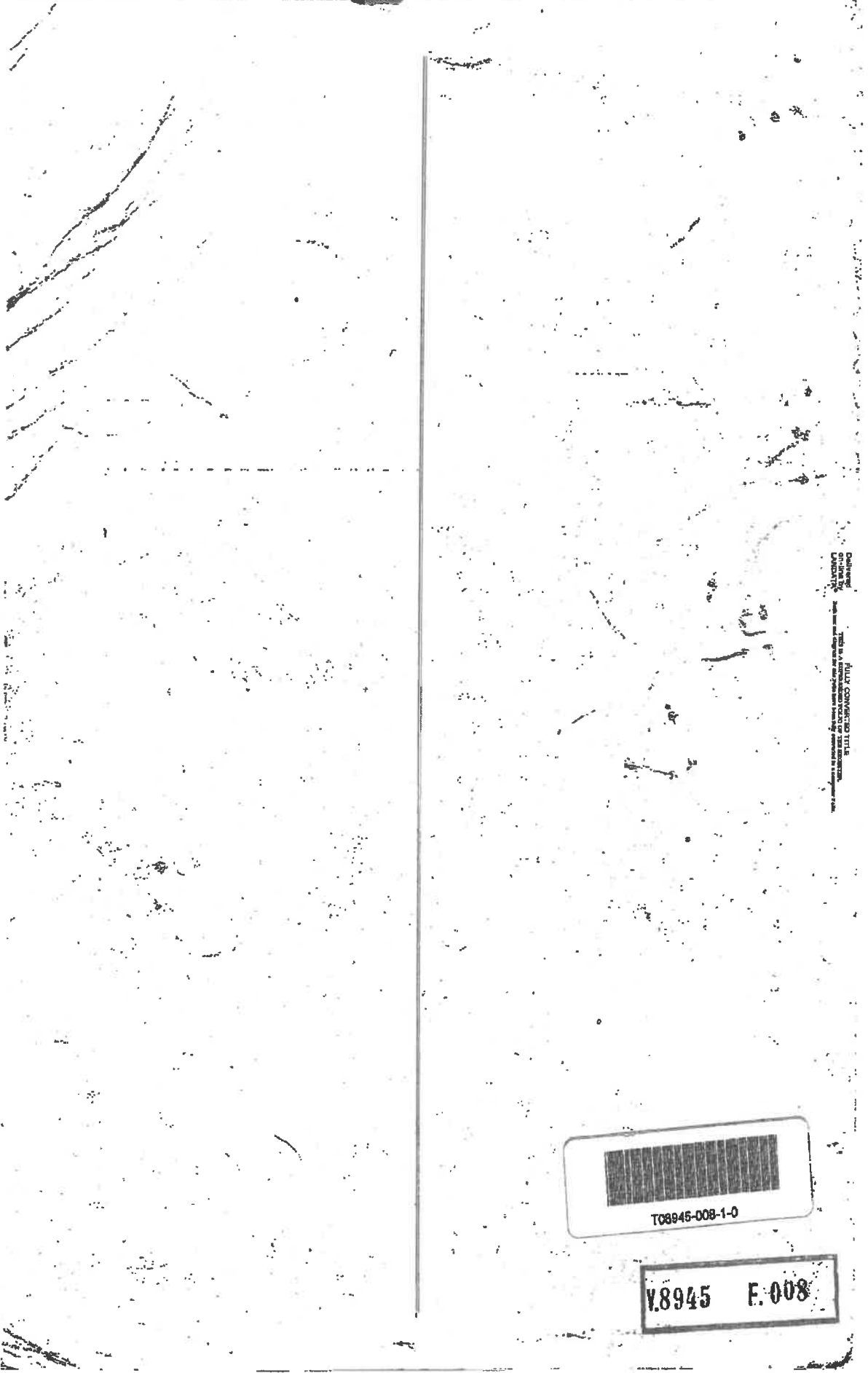
ENCUMBRANCES REFERRED TO



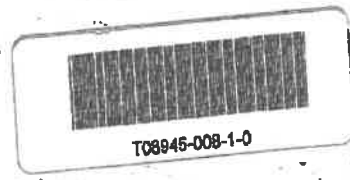
MEASUREMENTS ARE IN FEET AND INCHES

Derived from Vol. 5249 Fol. 736

E395368



Delivered by LANDATA®. Land Use Victoria timestamp 13/11/2018 13:25 Page 2 of 2



V.8945 E.008

TITLE PLAN	EDITION 1	TP 438679C						
Location of Land Parish: PRAHRAN Township: Section: Crown Allotment: B (PT) Portion: 136 Last Plan Reference: Derived From: VOL 8945 FOL 008 Depth Limitation: NIL		Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN						
Description of Land / Easement Information <p style="text-align: center;"><u>ALL THAT</u> piece of land delineated and coloured red on the map in the margin being part of Crown Allotment B Portion 136 Parish of - - - Prahran County of Bourke Together with a right of carriageway over the --- roads coloured brown on the said map - - - - -</p>		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 16/05/2000 VERIFIED: AC						
COLOUR CODE BR = BROWN R = RED								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">TABLE OF PARCEL IDENTIFIERS</th> </tr> <tr> <td colspan="2" style="font-size: small;">WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td> </tr> <tr> <td colspan="2" style="font-size: small;">PARCEL 1 = CA B (PT)</td> </tr> </table>			TABLE OF PARCEL IDENTIFIERS		WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962		PARCEL 1 = CA B (PT)	
TABLE OF PARCEL IDENTIFIERS								
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962								
PARCEL 1 = CA B (PT)								
LENGTHS ARE IN FEET & INCHES	Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 1 sheets						



CANCELLED

Vol. 5249 PL. 1049736

VICTORIA.

Certificate of Title

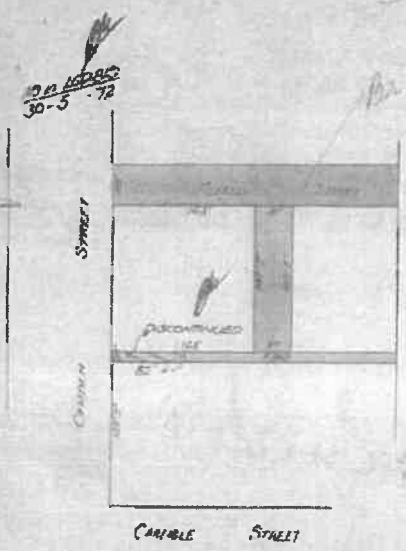
UNDER THE "TRANSFER OF LAND ACT 1916"

CMX
 Ruth Hannah of 18 Alfred Street St.Kilda Married Female is
 now the proprietor of an Estate in Fee-simple, subject to the Encumbrances
 notified hereunder in All that piece of Land delineated and colored
 red on the map in the margin being part of Crown Allotment B Portion One hundred and
 thirty-six Parish of Praeger East of St.Kilda County of Bourke Together with
 a right of carriage way over the roads colored brown on the said map

ORIGINAL CERTIFICATE.
 Not to be dealt with outside the Titles Office.

Dated the Eight day of April One
 thousand nine hundred and twenty-seven.

ENCUMBRANCES REFERRED TO.



Delivered on-line by LANDATA
 IMAGED FOLIO - WARNINGS: TO BE USED FOR DIAGRAM, EASEMENT INFORMATION, DEPTH LIMITATIONS AND ANY DIAGRAM NOTATIONS.
 The text of this Folio has been converted to a computer Folio and the effect of any dealings registered since the last conversion will appear on the computer Folio.



T05240-736-1-7

The Encumbrances are the first and only

Vol. 1215. Fol. 242998 Transfer 1313016. Application.

MORTGAGE to Robert Skerton registered 1927 numbered 562555 Assistant Registrar of Titles

MORTGAGE to AUBREY MARY TRAYNOR registered 1959 numbered 4680035

MORTGAGE to ... registered 1981 numbered 462018 Assistant Registrar of Titles

L.D.S. INVESTMENTS PROPRIETARY LIMITED of 232 Carlisle Street Melbourne is now the proprietor Registered 18th March 1970 No. D664280

... under of 18 Alfred Street St Kilda ... now the proprietor transfer registered 19 February 1968 and numbered 2495280 Assistant Registrar of Titles

MORTGAGE to THE COMMERCIAL BANK OF AUSTRALIA LIMITED Registered 12th October 1970 No. D85485

... of 18 Alfred Street Balactava widow is now the proprietor of the estate described estate by transfer registered on 5th April 1957 and numbered 2373002 Assistant Registrar of Titles

232 CARLISLE STREET PTY. LIMITED of 232 Carlisle Street Melbourne is now the proprietor Registered 13th April 1972 No. E346591

TRANSFER AS TO PART No. E392159 registered 17th May 1972 CANCELLED AS TO PART See Vol. 8936 Fol. 315

TRANSFER AS TO PART No. E392160 registered 17th May 1972 CANCELLED AS TO PART See Vol. 8936 Fol. 316

MORTGAGE to DIRECTOR OF WAR SERVICE HOMES registered 1957 numbered 991018 Assistant Registrar of Titles

TRANSFER AS TO BALANCE No. 295368 registered 19th May 1972 CANCELLED See Vol. 8945 Fol. 008

BENJAMIN ROSENBERG Tailor and MALKA ROSENBERG Married Woman both of 98 Chapel Street St Kilda are now the JOINT PROPRIETORS by Transfer No. 01504 Registered 3rd February 1959 125 31.11.59

MORTGAGE to THE ENGLISH SCOTTISH AND AUSTRALIA BANK LIMITED registered 3rd February 1959 numbered 4681505

CANCELLED

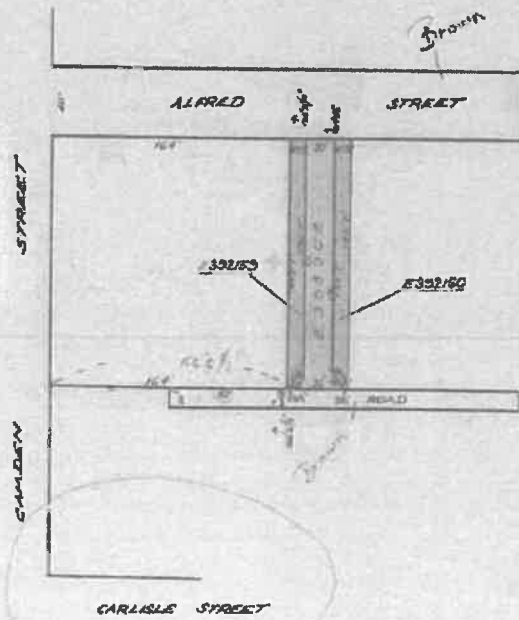
Delivered on-line by LANDATA® IMAGED FOLIO - WARNING: TO BE USED FOR DIAGRAM, EASEMENT INFORMATION, DEPTH LIMITATIONS AND ANY DIAGRAM NOTATIONS. The text of this Folio has been converted to a computer Folio and the effect of any future registration of the text provisions will appear on the computer Folio.

60 feet

5249 - 730

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dealing registered since the last conversion will appear on the computer Folio.



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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 4883 Folio 528

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 03840 Folio 920

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 16/05/2003 05:04:01 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
09/10/2013	10/10/2013	AK643897B	Y

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

VOLUME 04883 FOLIO 528
124047702431K
Produced 10/10/2013 10:55 am

LAND DESCRIPTION

Lot 1 on Title Plan 696058T (formerly known as part of Portion 136A AT EAST
ST.KILDA Parish of Prahran).
PARENT TITLE Volume 03840 Folio 920
Created by instrument 1173112 03/07/1924

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA
G739219 09/08/1977

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP696058T FOR FURTHER DETAILS AND BOUNDARIES

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who is licensed by the State to provide this information.

Entered in the Register Book

FRANKLIN
 INDEX 128 PAGE 65

Vol. 4883 Pt. 976528



VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1916."

Ellie Isabel Willis of Ann Street Windsor Widow is -----
 now the proprietor of an Estate in *Persepolis*, subject to the Encumbrances
 notified hereunder in. All that piece of Land, delineated and colored
 red and blue on the map in the margin being part of Crown Partion One hundred and
 thirty-six^A at East St. Hilda Parish of Franklin County of Bourke as to the ---
 land colored blue Together with the top of the party wall which was on the 16th ---
 day of June 1924 standing on the land colored yellow on the said map -----

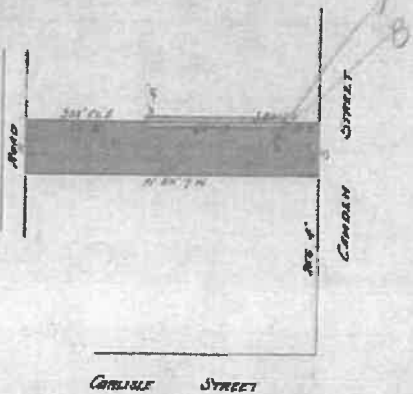
ORIGINAL CERTIFICATE
 Not to be dealt with outside the Titles Office.

Dated the Third day of July One thousand nine hundred and twenty-four.

John W. Robinson
 Justice of the Peace

ENCUMBRANCES REFERRED TO.

As to the land colored blue ---
 THE PARTY WALL EASEMENT reserved by instrument
 of Transfer No. 1173112 in the Register Book---



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 Both text and diagrams for this Folio have been fully converted to a computer Folio.

FULLY CONVERTED TITLE



704883-628-1-8

The Encumbrances are in effect

Vol. 3840 Fol. 767920 Transfer. 1173112 Application.

DISCHARGED
14 October 1930
REGISTERED IN THE SAVINGS BANK OF VICTORIA
registered on
numbered 502754
Assistant Registrar of Titles

13
Lilie Algernon Swan Maxwell of
"Arveno" Popetoun Road Moorak
Medical Practitioner is
now the proprietor of the within described estate by
transfer registered on 23 September 1930
and numbered 1466729
Assistant Registrar of Titles

16
Clifford Turner of 37 Camden
Street Balaclava Piano Repairer is
now the proprietor of the within described estate by
transfer registered on 22 June 1937
and numbered 1657245
Assistant Registrar of Titles

17
DISCHARGED
THE FEDERAL BUILDING SOCIETY
registered
numbered 789925
Assistant Registrar of Titles

18
Jessie May Lawrence of 14 Newmarket
Windsor Married Woman is
now the proprietor of the within described estate by
transfer registered on 31 March 1947
and numbered 265735
Assistant Registrar of Titles

19
John Joseph Parker of 420 Robe
Street Gt. Tilda Chemist is
now the proprietor of the within described estate by
transfer registered on 1st July 1948
and numbered 21149936
Assistant Registrar of Titles

20
Conrad Frederick Director of Railway
is
now the proprietor of the within described estate by
transfer registered on 24 July 1950
and numbered 2326
Assistant Registrar of Titles

DISCHARGED
Commonwealth Bank of Australia
numbered 95206
Assistant Registrar of Titles

JOHN LINN TAYLOR of 39 Camden Street St. Kilda
Railway Employee is now the proprietor
Registered 19th January 1966
No. 6105236

21
JOHN LINN TAYLOR died on 1st December 1976 Probate
of his Will has been granted to MATH HELEN BROWN
482 Houghton Road Clayton Married Woman
Registered 19th July 1977
No. 6713295

22
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF
is now the proprietor
Registered 9th August 1977
No. 6759219

Delivered
on-line by
LANDATA®
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FULLY CONVERTED TITLE
THIS IS A SUPERSEDED FOLIO OF THE REGISTER.

TITLE PLAN	EDITION 1	TP 696058T
-------------------	------------------	-------------------

Location of Land

Parish: AT EAST ST KILDA PARISH OF PRAHRAN
 Township:
 Section:
 Crown Allotment:
 Crown Portion: 136A (PT)

Last Plan Reference:
 Derived From: VOL 4883 FOL 528
 Depth Limitation: NIL

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

All the pieces of Land, delineated and coloured red and blue on the map in the margin being part of Crown Portion One hundred and thirty-six at East St. Kilda Parish of Prahran County of Bourke as to the land colored blue together with the use of the party wall which was on the 16th day of June 1924 standing on the land colored yellow on the said map - - - - -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
 COMPILED: 21/11/2000
 VERIFIED: C.L.

COLOUR CODE

- R = RED
- BL = BLUE
- Y = YELLOW

ENCUMBRANCES REFERRED TO.

As to the land colored blue ---
THE PARTY WALL EASEMENT reserved by Instrument of Transfer No. 1173112 in the Register Book----

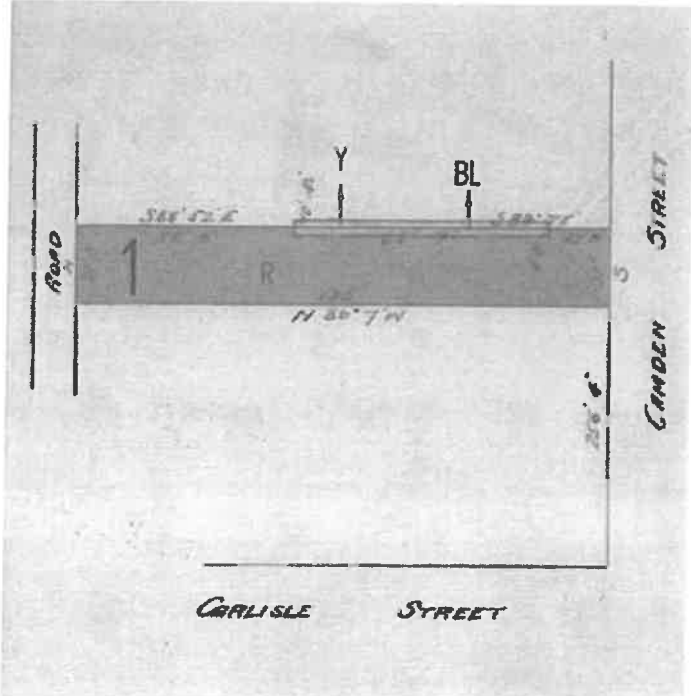


TABLE OF PARCEL IDENTIFIERS	
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962	
PARCEL 1 = CP 136A (PT)	

Historical Search

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 3840 Folio 823

Folio Creation: Created as paper folio continued as computer folio

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 12/09/2002 05:01:25 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
22/11/2007	22/11/2007	AF484748W	Y

RECTIFICATION-PROPRIETOR NAME/ADDRESS

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA of CNR BRIGHTON ROAD & CARLISLE STREET ST KILDA VIC 3182

D977801 04/03/1971

09/10/2013	10/10/2013	AK643897B	Y
------------	------------	-----------	---

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

Volume 03840 Folio 823
124024128285G
Produced 22/11/2007 08:14 am

LAND DESCRIPTION

Lot 1 on Title Plan 707315V (formerly known as part of Portion 136A AT EAST ST
KILDA Parish of Prahran).
Created by Application No. 041230 31/10/1914

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA
D977801 04/03/1971

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP707315V FOR FURTHER DETAILS AND BOUNDARIES

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Entered in the Register Book.

Vol 3840 Folio 767823



VICTORIA.



5/11/18

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1860."

EF
 Clara Elisabeth Duncan of 52 Betham Street St Kilda in the County of Bourke Married Woman is
now the proprietor of an Estate in Fee simple, subject to the Encumbrances notified hereunder in All the or piece of Land, abstraced and coloured red on the map in the margin, containing Ten perches and five-tenths of a perch or - - - - - thereabouts, being part of Crown Portion One hundred and thirty-six^A at East St Kilda - - - - - Parish of Prahran County of Bourke - - - - -

ORIGINAL CERTIFICATE.

Not to be dealt with outside the Titles Office.

Delivered on-line by LANDATA®

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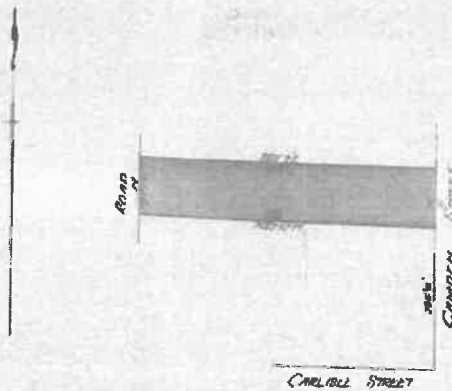
FULLY CONVERTED TITLE

Dated the *thirty-first* day of *October* *thousand nine hundred and fourteen.*

N. A. King
 Assistant Registrar of Titles



ENCUMBRANCES REFERRED TO IN THE SPECIAL RAILWAY CONDITIONS in the Crown Grant to Charles Cook of said Crown Portion *1/1*



103840-823-1-1

Vol. Fol. Transfer. Application 41220

Number of Instrument	Day and Hour of its Production	Names of the Parties to it	Number or Symbol thereof
		<p>Sarah Yockenshon of 41 Camden Street St. Kilda Married Woman is now the proprietor of the within-described land pursuant to a transfer from Clara Elizabeth Duncan registered on the 30th day of April 1932 and numbered 824647.</p> <p>Red Ink No. 5424690</p> <p>12th March 1932</p> <p>Probate of her Will has been granted to John Jervis Bourke of 141A Chapel Street St. Kilda Solicitor and Frederick George Yockenshon of Melbourne Hotel Proprietor Butcher and Sarah Yockenshon of Melbourne Hotel Proprietor Butcher.</p> <p>L. Forster. Assistant Registrar of Titles</p>	
		<p>Leonard Stephenson of 41 Camden Street St. Kilda Constable of Police is the proprietor of the within described land by number registered on 20 JUN 1953 and numbered 2568769</p> <p>Assistant Registrar of Titles</p>	
		<p>ALBERT JAMES PITMAN of 21 Florida Avenue Beaumaris Gentleman is now the proprietor Registered 29th July 1964 No. 8994331</p> <p>Assistant Registrar of Titles</p>	
		<p>EVERETT JAMES THOMAS CORBETT Fur Flasher and KATHLEEN CORBETT Married Woman both of 41 Camden Street Balaclava are now Joint Proprietors Registered 4th March 1971 No. D977810</p> <p>Assistant Registrar of Titles</p>	
		<p>THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA is now the proprietor registered 4th March 1971 No. D977801</p> <p>Assistant Registrar of Titles</p>	

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TITLE PLAN		EDITION 1	TP 707315V
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Location of Land

Parish: AT EAST ST. KILDA PARISH OF PRAHRAN
 Township:
 Section:
 Crown Allotment:
 Crown Portion: 136A (PT)

Last Plan Reference:
 Derived From: VOL 3940 FOL 823
 Depth Limitation: NIL

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
 COMPILED: 09/12/2000
 VERIFIED: HG

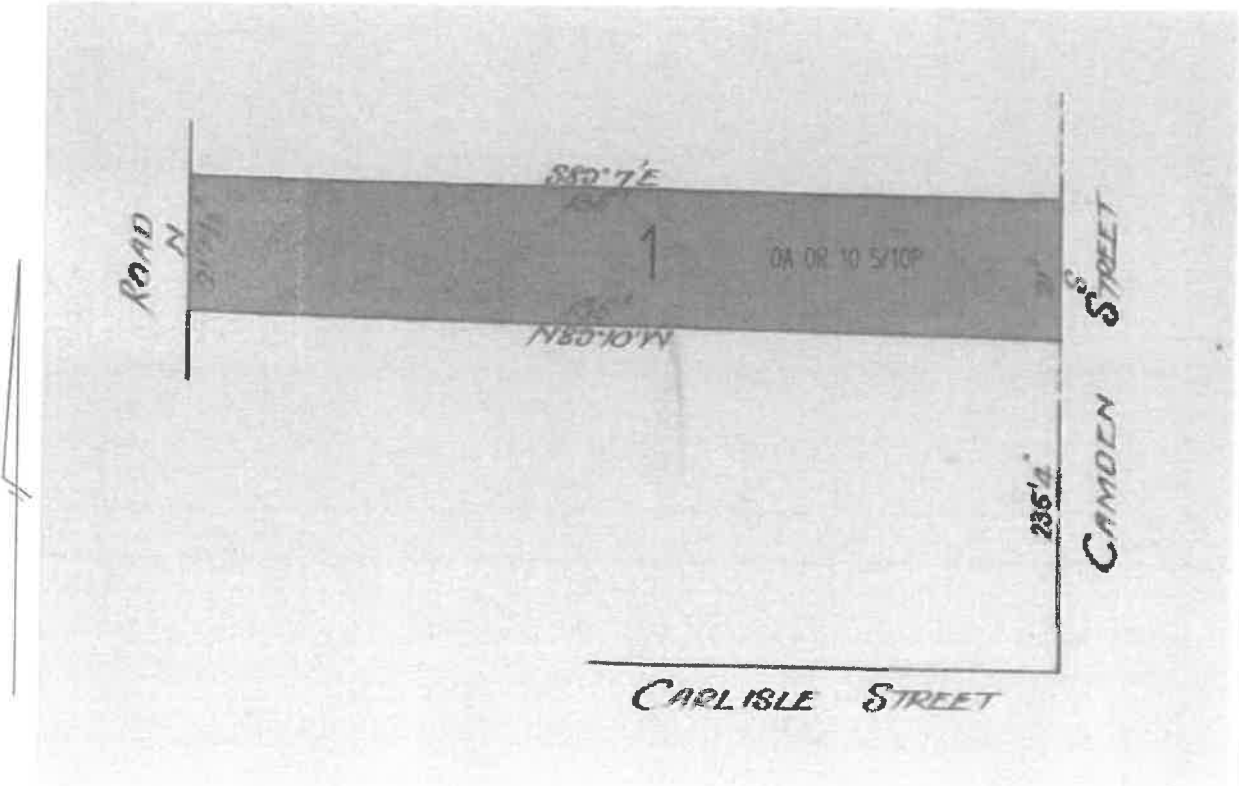


TABLE OF PARCEL IDENTIFIERS	
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962	
PARCEL 1 = CP 136A (PT)	

VOTS Snapshot

VOLUME 11468 FOLIO 134
124048920530P
Produced 15/01/2014 12:20 pm

LAND DESCRIPTION

Lot 1 on Title Plan 952966F.
Created by Application No. 115134L 18/09/2013

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182
Application No. 115134L 18/09/2013

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

Warning as to Dimensions

Any dimension and connecting distance shown is based on the description of the land as contained in the General Law Title and is not based on survey information which has been investigated by the Registrar of Titles.

Warning as to subsisting interests

This title is based on General Law documents which have not been investigated by the Registrar of Titles. Subsisting interests under the General Law may affect this title.

DIAGRAM LOCATION

SEE TP952966F FOR FURTHER DETAILS AND BOUNDARIES

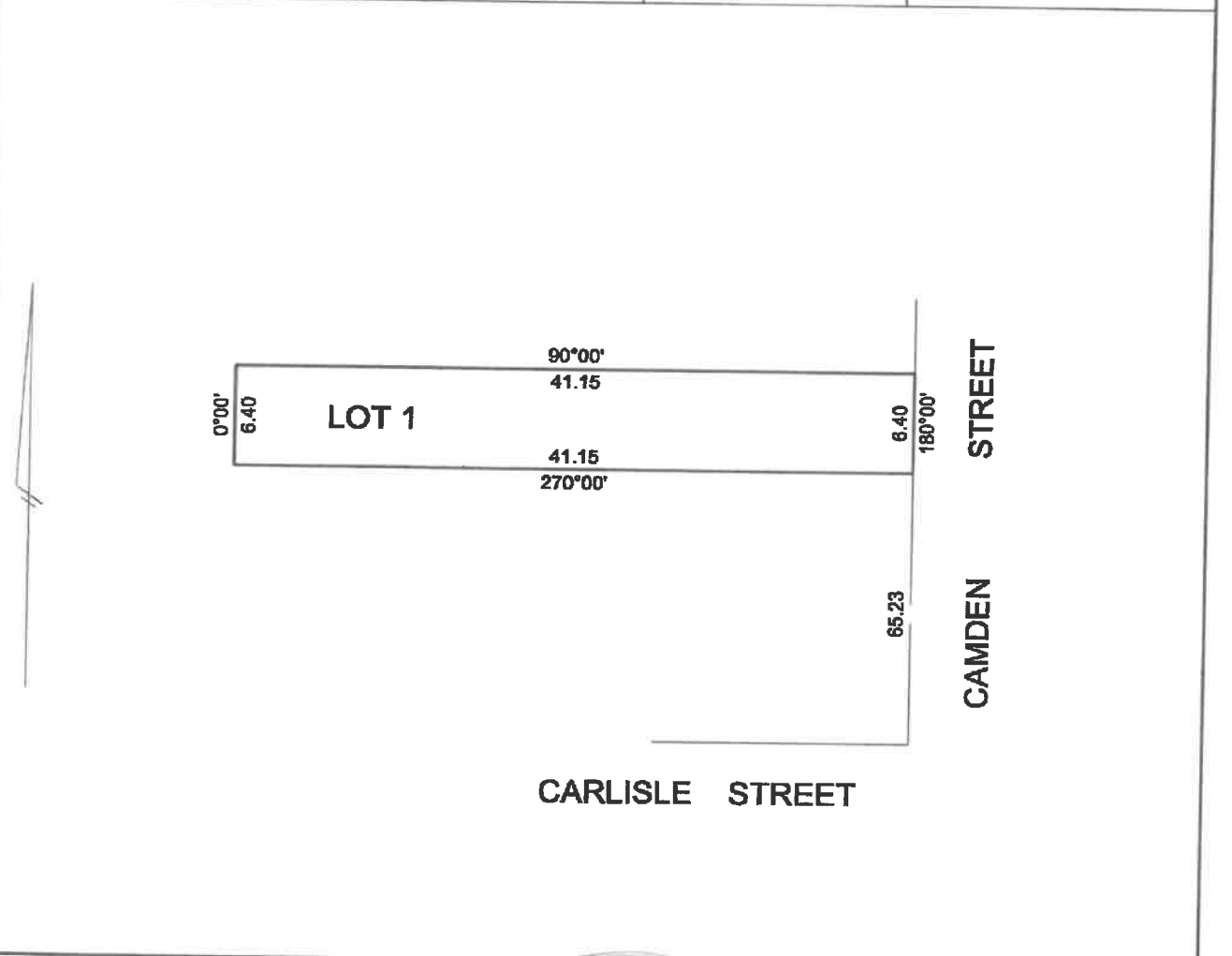
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9

TITLE PLAN	EDITION 1	TP952966F
LOCATION OF LAND PARISH: PRAHRAN TOWNSHIP: SECTION: CROWN ALLOTMENT: CROWN PORTION: 136A (PT) LAST PLAN REFERENCE: DERIVED FROM: DEPTH LIMITATION: NIL	NOTATIONS WARNING AS TO DIMENSIONS: ANY DIMENSION AND CONNECTING DISTANCE SHOWN IS BASED ON THE DESCRIPTION OF THE LAND CONTAINED IN THE GENERAL LAW TITLE AND IS NOT BASED ON SURVEY INFORMATION WHICH HAS BEEN INVESTIGATED BY THE REGISTRAR OF TITLES.	

EASEMENT INFORMATION					THIS PLAN HAS BEEN PREPARED BY LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES Checked by: MS Date: 14/1/2014 Assistant Registrar of Titles
<small>E - ENCUMBERING EASEMENT, R - ENCUMBERING EASEMENT (ROAD), A - APPURTENANT EASEMENT.</small>					
Easement Reference	Purpose / Authority	Width (Metres)	Origin	Land benefited / In favour of	



LENGTHS ARE IN METRES	SCALE —	DEALING / FILE No: AP115134L GOVERNMENT GAZETTE No:	DEALING CODE: 23
			SHEET 1 OF 1

Historical Search

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HISTORICAL SEARCH STATEMENT Land Use Victoria

Produced 13/11/2018 01:22 PM

Volume 1732 Folio 339

Folio Creation: Created as paper folio continued as computer folio

Parent title Volume 01033 Folio 447

THE IMAGE OF THE FOLIO CEASED TO BE THE DIAGRAM LOCATION ON 12/09/2002 05:01:25 AM

RECORD OF HISTORICAL DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged	Dealing Type and Details
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RECORD OF VOTS DEALINGS

Date Lodged for Registration	Date Recorded on Register	Dealing	Imaged
22/11/2007	22/11/2007	AF486778B	Y

RECTIFICATION-PROPRIETOR NAME/ADDRESS

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA of CNR BRIGHTON ROAD & CARLISLE STREET ST KILDA VIC 3182

B370090 22/02/1962

09/10/2013	10/10/2013	AK643897B	Y
------------	------------	-----------	---

RECORDING OF DISPOSITION OF LAND

FROM:

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST KILDA

TO:

PORT PHILLIP CITY COUNCIL

RESULTING PROPRIETORSHIP:

Estate Fee Simple

Sole Proprietor

PORT PHILLIP CITY COUNCIL of 99A CARLISLE STREET ST KILDA VIC 3182

AK643897B 09/10/2013

STATEMENT END

VOTS Snapshot

Volume 01732 Folio 339
124024143265Y
Produced 22/11/2007 04:56 pm

LAND DESCRIPTION

Lot 1 on Title Plan 702671Y (formerly known as part of Portion 136A AT SAINT
KILDA Parish of Prahran).
PARENT TITLE Volume 01033 Folio 447
Created by instrument 153647 02/09/1885

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST.KILDA
E370090 22/02/1962

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section
24 Subdivision Act 1988 and any other encumbrances shown or entered on the
plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP702671Y FOR FURTHER DETAILS AND BOUNDARIES

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Entered in the Register Book

Vol. 132 Pt. 3 26339



VICTORIA.

FRANZ
128 1953

Certificate of Title,

UNDER THE "TRANSFER OF LAND STATUTE"

*Adrian Charles Stewart of 2nd Street Maffra (hereinafter
now the proprietor of an Estate in Fee simple, subject to the Encumbrances
notified hereunder in All that piece of Land delineated and colored
red on the Map in the margin, containing one rood one perch and six
tenths of a perch or thereabouts being part of Crown Portion one hundred
and thirty six A at Saint Hilda Parish of Heathcote County of Bourke*

ORIGINAL CERTIFICATE

Not to be dealt with outside the Title Office

Dated the second _____ day of September _____ One thousand
eight hundred and eighty five

[Signature]



Assistant Registrar of Titles
ENCUMBRANCES REFERRED TO.

REGISTRATION NO. 5211
[Signature]
REGISTRAR OF TITLES



Encumbrance shown

[Signature]
14-5-75

APPROVED
14-5-75
Appn. 45675



T01732-339-1-3


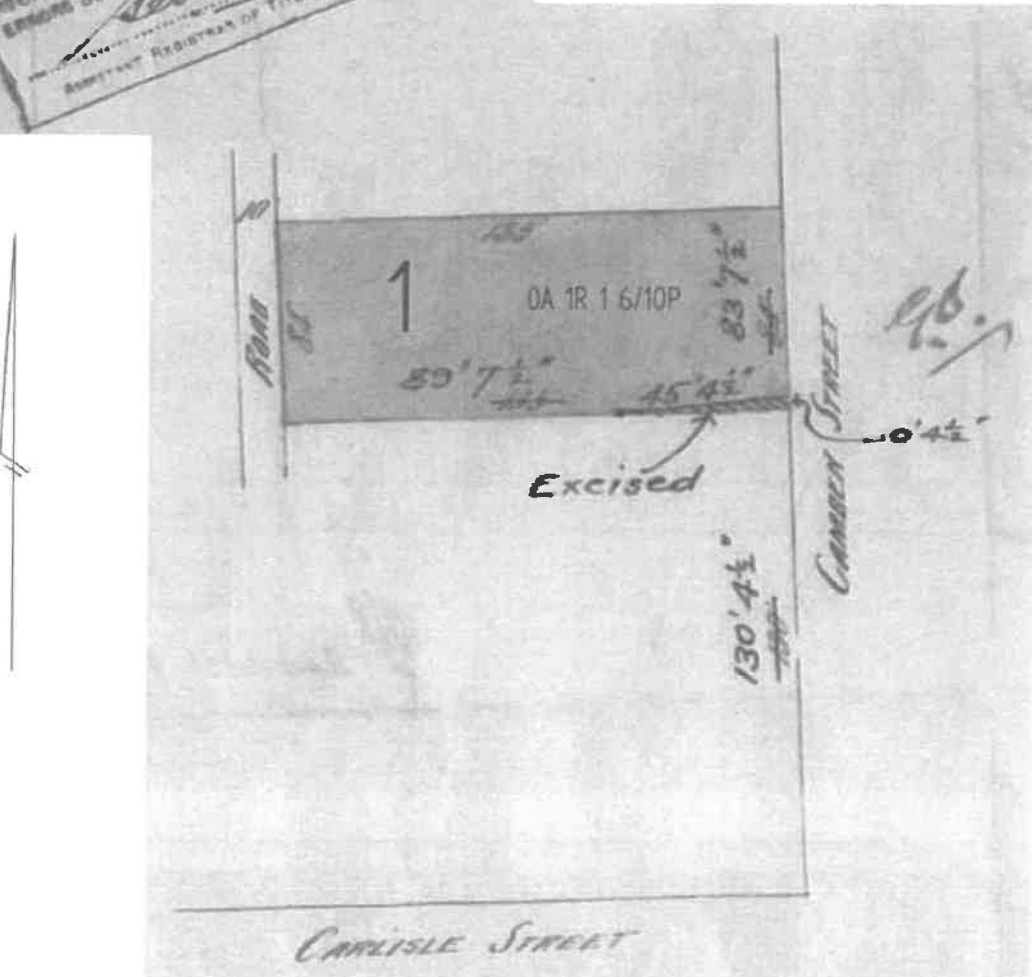
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Both text and diagram for this Folio have been fully converted to a computer Folio.

FULLY CONVERTED TITLE

Volume	Transfer	Application
Vol. 1053	Transfer 153/047	Application
<p><i>THE MAYOR AND COUNCILLORS OF THE CITY OF ST. KILDA</i></p> <p>is now the proprietor by transfer B370090 registered 22nd February 1963</p>	<p>The 2nd day of September 1895 at 12 o'clock in the afternoon</p>	<p>Adrian Charles Akhurst to William Henry Fickett and John Fenwick Hodgkinson</p> <p>67730</p> <p>Assistant Registrar of Titles</p>
<p>Emily Clara Bennett of 124 Green Street, Melbourne</p> <p>has been granted to Charles William Hodgkinson and John Fenwick Hodgkinson</p> <p>113 Green Street, Melbourne</p> <p>19 Dec 1951</p> <p>24.1.52</p>	<p>The 15th day of January 1906 at 12 o'clock in the afternoon</p>	<p>Camden Street, Balclutha</p> <p>registered on 21/2/51</p> <p>Assistant Registrar of Titles</p>
<p>Substituted Dry State Certificate prepared. Dated 12 day of June 1929</p> <p>Assistant Registrar of Titles</p>	<p>The 12th day of June 1929</p>	<p>Assistant Registrar of Titles</p>
<p>Red Ink No. 5587456</p> <p>Emily Clara Bennett of 124 Green Street, Melbourne</p> <p>has been granted to Charles William Hodgkinson and John Fenwick Hodgkinson</p> <p>113 Green Street, Melbourne</p> <p>19 Dec 1951</p> <p>24.1.52</p>	<p>The 12th day of June 1929</p>	<p>Assistant Registrar of Titles</p>

Delivered on-line by LANDATA® THIS IS A SUPERIMPOSED PHOTO OF THE REGISTER FULLY CONVERTED TITLE

TITLE PLAN	EDITION 1	TP 702671Y						
<p>Location of Land</p> <p>Parish: AT ST. KILDA PARISH OF PRAHRAN</p> <p>Township:</p> <p>Section:</p> <p>Crown Allotment:</p> <p>Crown Portion: 136A (PT)</p> <p>Last Plan Reference:</p> <p>Derived From: VOL 1732 FOL 939</p> <p>Depth Limitation: NIL</p>	<p style="text-align: center;">Notations:</p> <p style="text-align: center;">ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN</p>							
Description of Land / Easement Information		<p>THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT</p> <p>COMPILED: 07-12-2000</p> <p>VERIFIED: A.D.</p>						
								
								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">TABLE OF PARCEL IDENTIFIERS</th> </tr> <tr> <td colspan="2" style="text-align: center;">WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td> </tr> <tr> <td colspan="2" style="text-align: center;">PARCEL 1 = CP 136A (PT)</td> </tr> </table>			TABLE OF PARCEL IDENTIFIERS		WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962		PARCEL 1 = CP 136A (PT)	
TABLE OF PARCEL IDENTIFIERS								
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962								
PARCEL 1 = CP 136A (PT)								
<p>LENGTHS ARE IN FEET & INCHES</p>	<p>Metres = 0.3048 x Feet</p> <p>Metres = 0.201168 x Links</p>	<p>Sheet 1 of 1 sheets</p>						

From www.planning.vic.gov.au on 10 December 2018 08:18 PM

PROPERTY DETAILS

Address: **39-47 CAMDEN STREET BALACLAVA 3183**
 Lot and Plan Number: **Lot 1 TP696058**
 Standard Parcel Identifier (SPI): **1\TP696058**
 Local Government Area (Council): **PORT PHILLIP** www.portphillip.vic.gov.au
 Council Property Number: **199595**
 Planning Scheme: **Port Phillip** planning-schemes.delwp.vic.gov.au/schemes/portphillip
 Directory Reference: **Melway 2P H9**

This property has 4 parcels. For full parcel details get the free Basic Property report at [Property Reports](#)

UTILITIES

Rural Water Corporation: **Southern Rural Water**
 Melbourne Water Retailer: **South East Water**
 Melbourne Water: **inside drainage boundary**
 Power Distributor: **CITIPOWER**

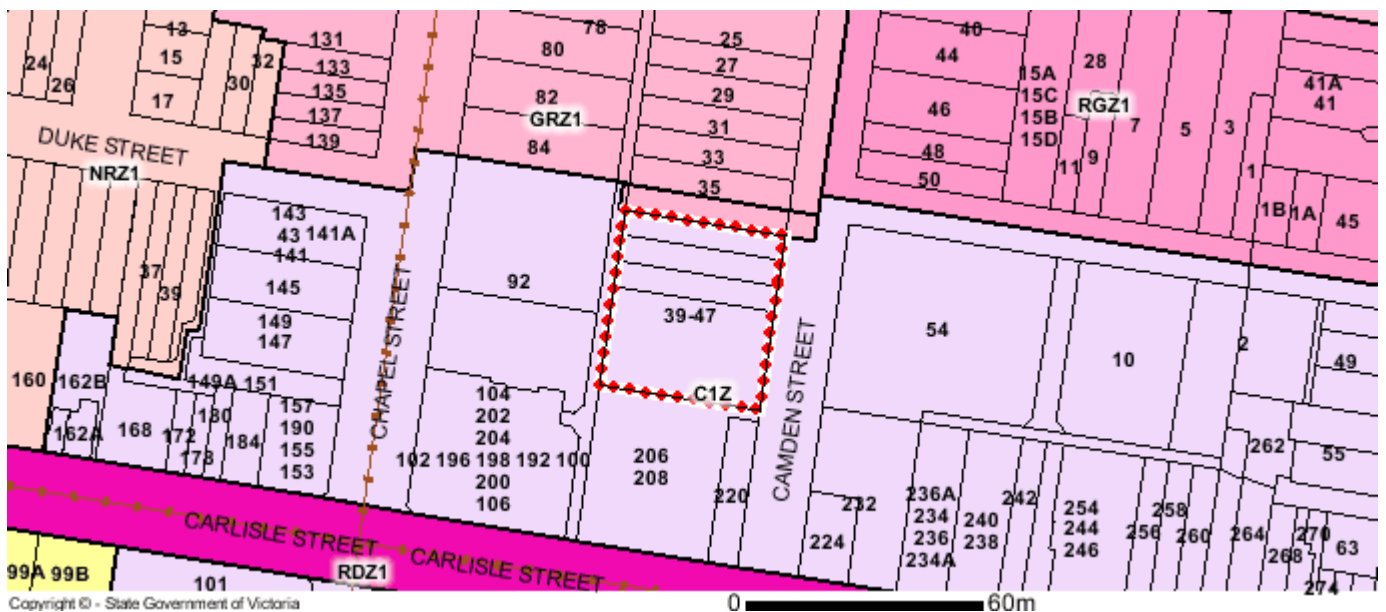
STATE ELECTORATES

Legislative Council: **SOUTHERN METROPOLITAN**
 Legislative Assembly: **CAULFIELD**

Planning Zones

[COMMERCIAL 1 ZONE \(C1Z\)](#)

[SCHEDULE TO THE COMMERCIAL 1 ZONE \(C1Z\)](#)



- | | | | | | |
|--|--------------------------------------|--|---------------------------|--|---------------------------------|
| | C1Z - Commercial 1 | | GRZ - General Residential | | NRZ - Neighbourhood Residential |
| | PUZ6 - Public Use - Local Government | | RDZ1 - Road - Category 1 | | RGZ - Residential Growth |

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

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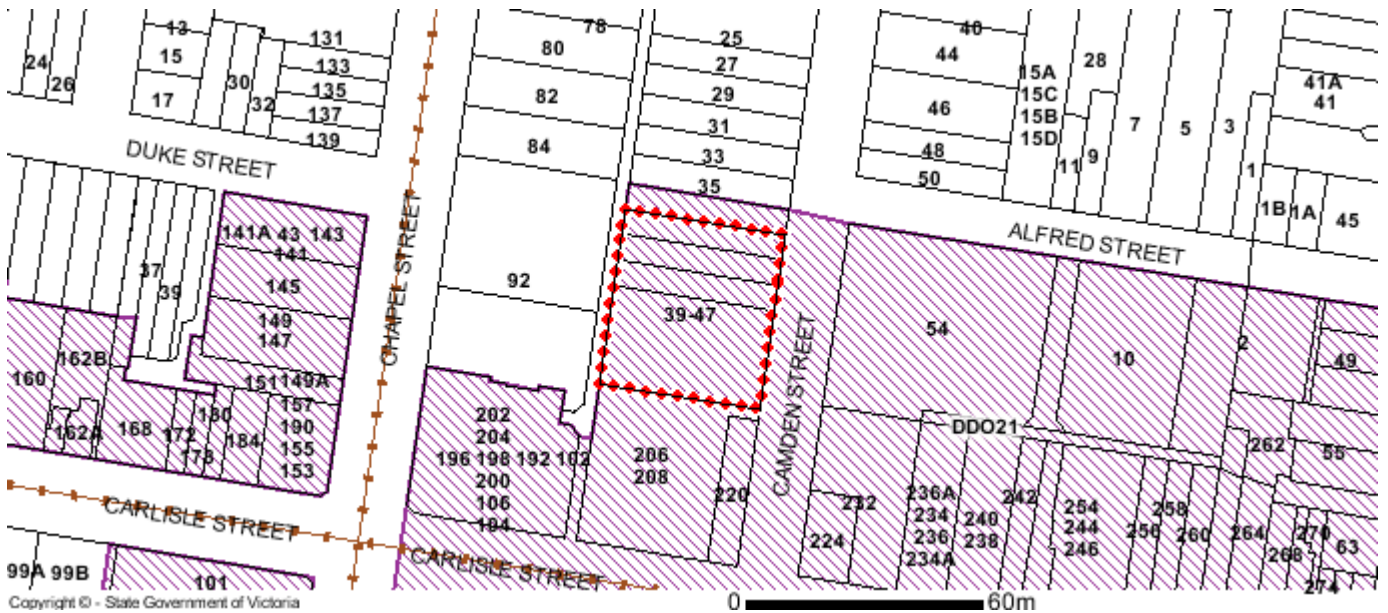
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Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 21 (DDO21)



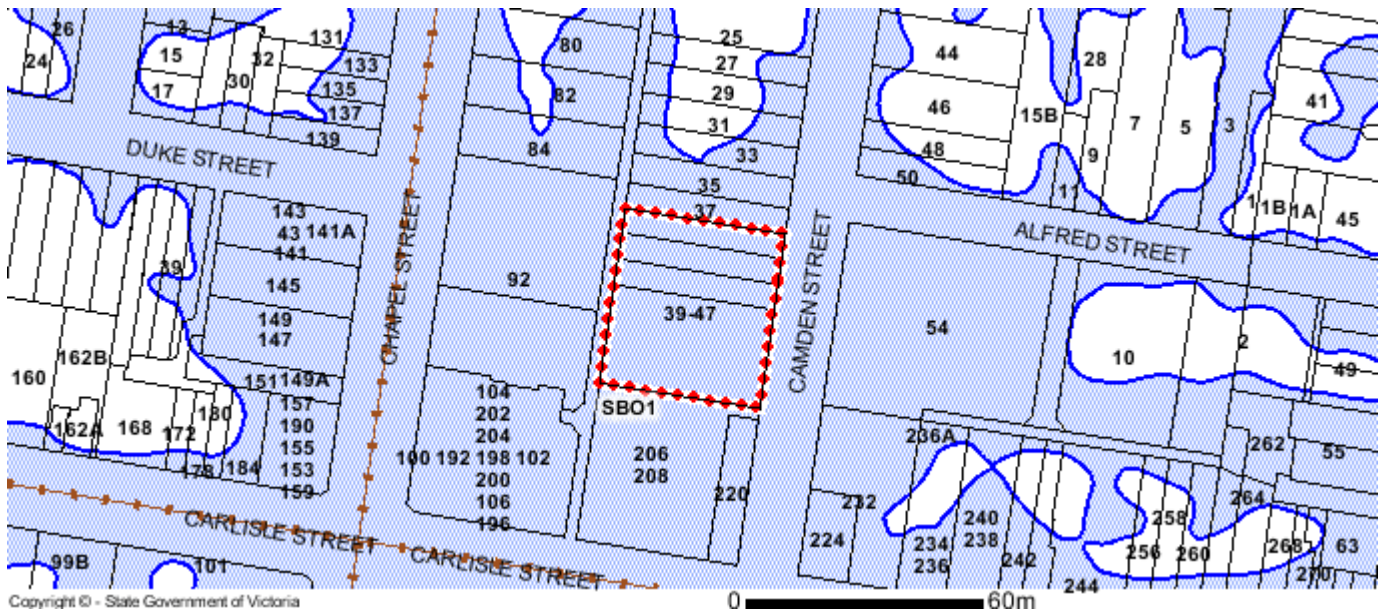
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DDO - Design and Development

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SPECIAL BUILDING OVERLAY (SBO)

SPECIAL BUILDING OVERLAY - SCHEDULE 1 (SBO1)



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SBO - Special Building

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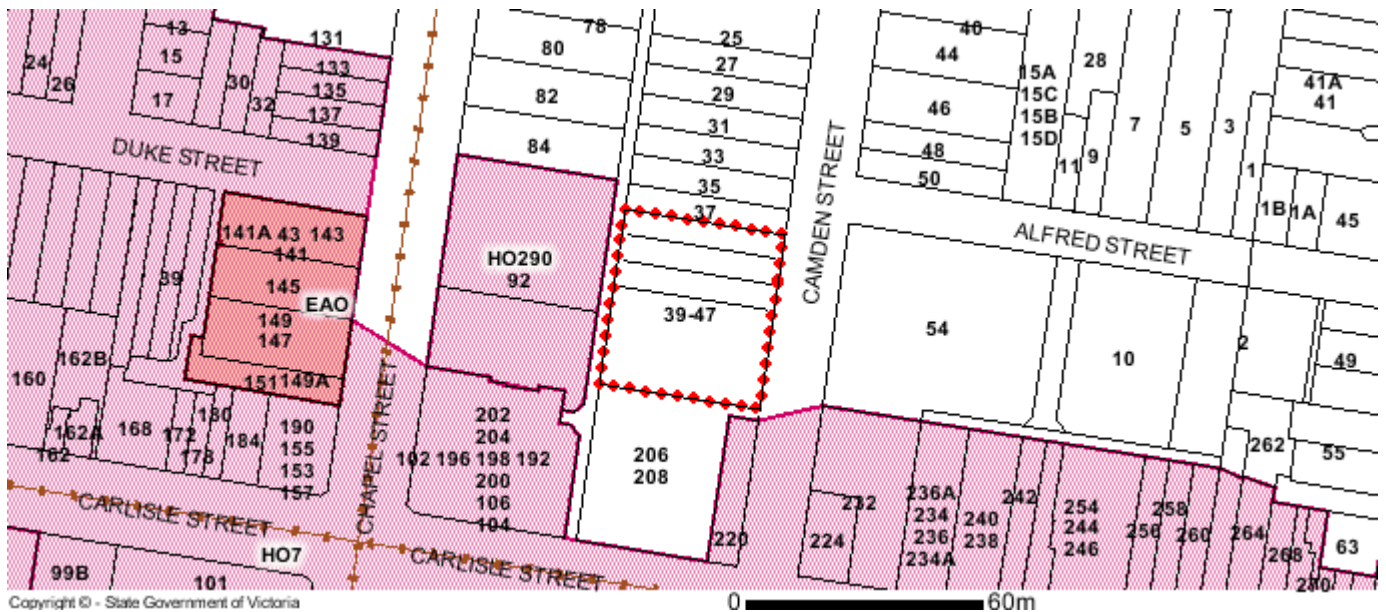
Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

[ENVIRONMENTAL AUDIT OVERLAY \(EAO\)](#)

[HERITAGE OVERLAY \(HO\)](#)



EAO - Environmental Audit HO - Heritage

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Further Planning Information

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PROPERTY DETAILS

Lot and Plan Number: **Lot 1 TP438679**
 Address: **ALFRED STREET BALACLAVA 3183**
 Standard Parcel Identifier (SPI): **1\TP438679**
 Local Government Area (Council): **PORT PHILLIP**
 Council Property Number: **NCPR**
 Planning Scheme: **Port Phillip**
 Directory Reference: **Melway 2P H9**

www.portphillip.vic.gov.au

planning-schemes.delwp.vic.gov.au/schemes/portphillip

UTILITIES

Rural Water Corporation: **Southern Rural Water**
 Melbourne Water Retailer: **South East Water**
 Melbourne Water: **inside drainage boundary**
 Power Distributor: **CITIPOWER**

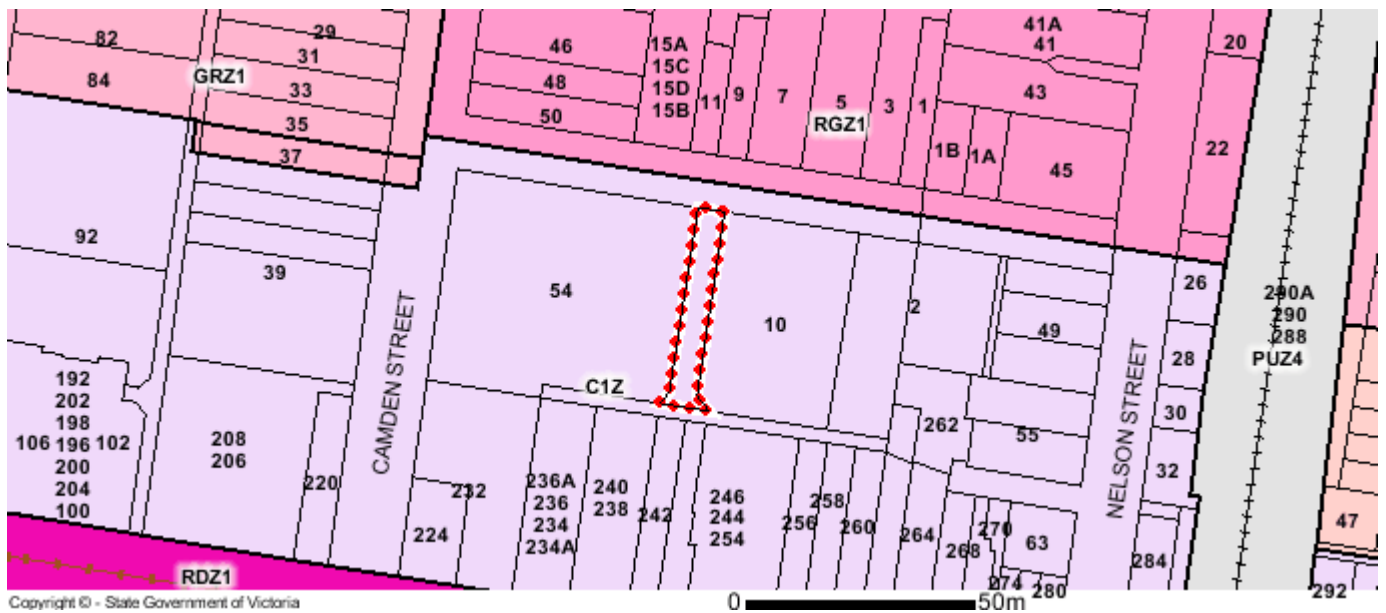
STATE ELECTORATES

Legislative Council: **SOUTHERN METROPOLITAN**
 Legislative Assembly: **CAULFIELD**

Planning Zones

[COMMERCIAL 1 ZONE \(C1Z\)](#)

[SCHEDULE TO THE COMMERCIAL 1 ZONE \(C1Z\)](#)



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- C1Z - Commercial 1
- GRZ - General Residential
- NRZ - Neighbourhood Residential
- PUZ4 - Public Use - Transport
- RDZ1 - Road - Category 1
- RGZ - Residential Growth

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

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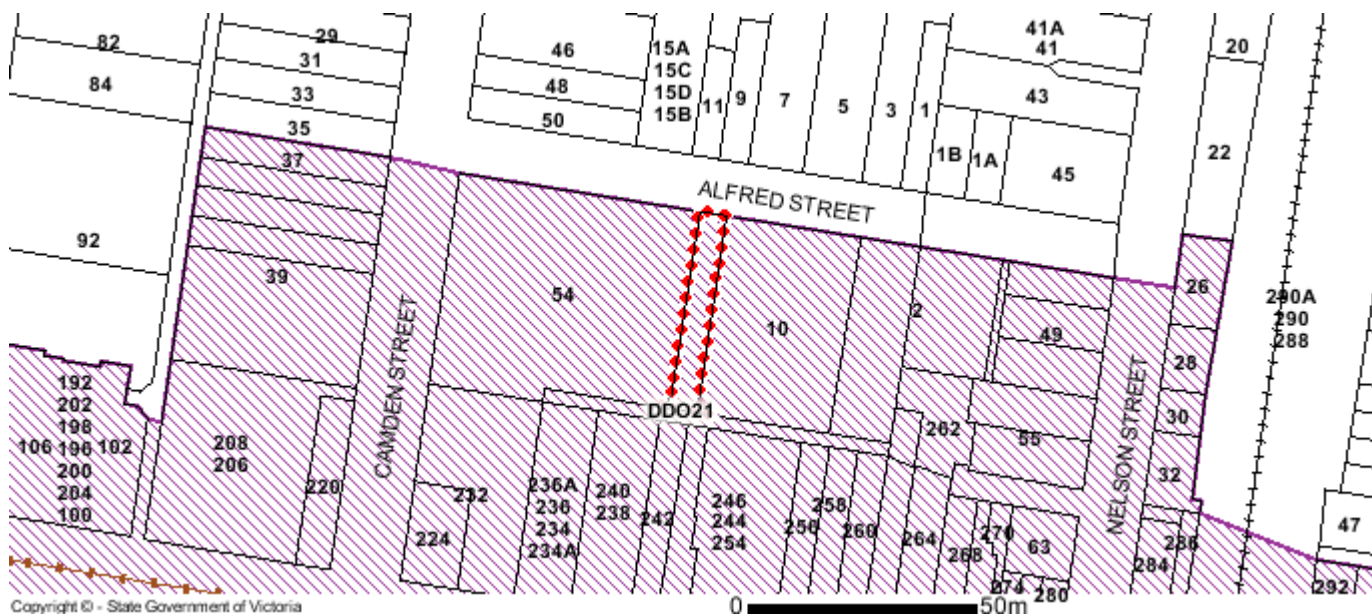
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DESIGN AND DEVELOPMENT OVERLAY (DDO)

DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 21 (DDO21)

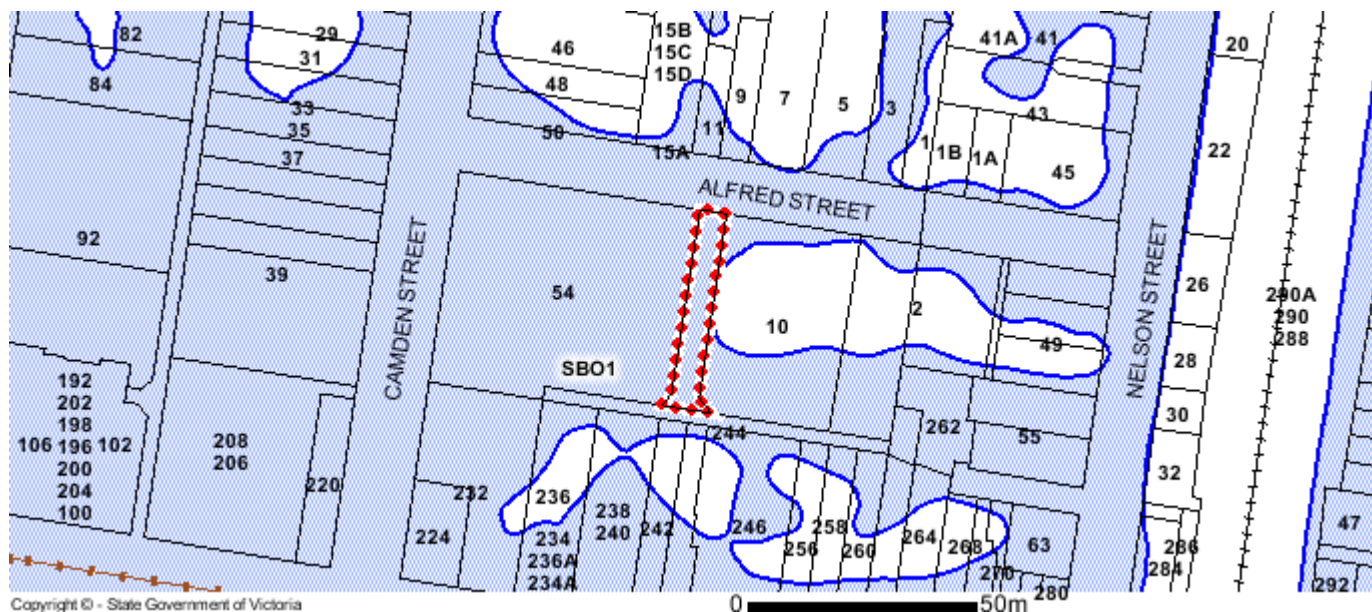


 DDO - Design and Development

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SPECIAL BUILDING OVERLAY (SBO)

SPECIAL BUILDING OVERLAY - SCHEDULE 1 (SBO1)



 SBO - Special Building

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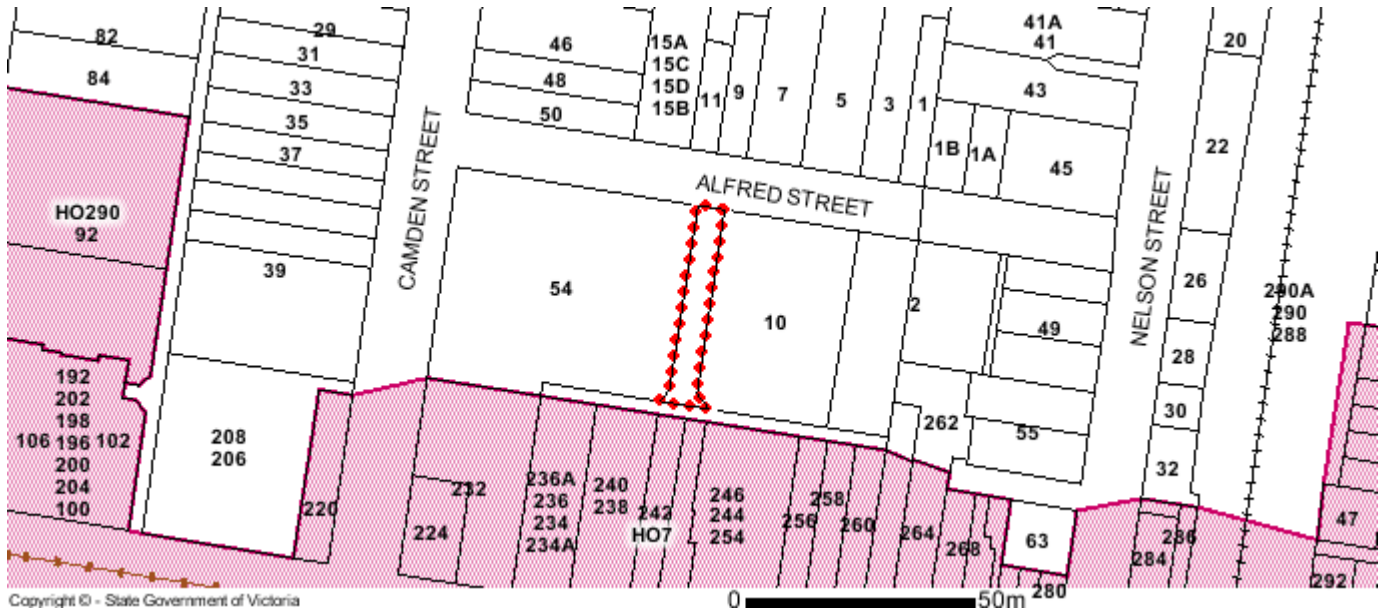
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Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

HERITAGE OVERLAY (HO)



HO - Heritage

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Further Planning Information

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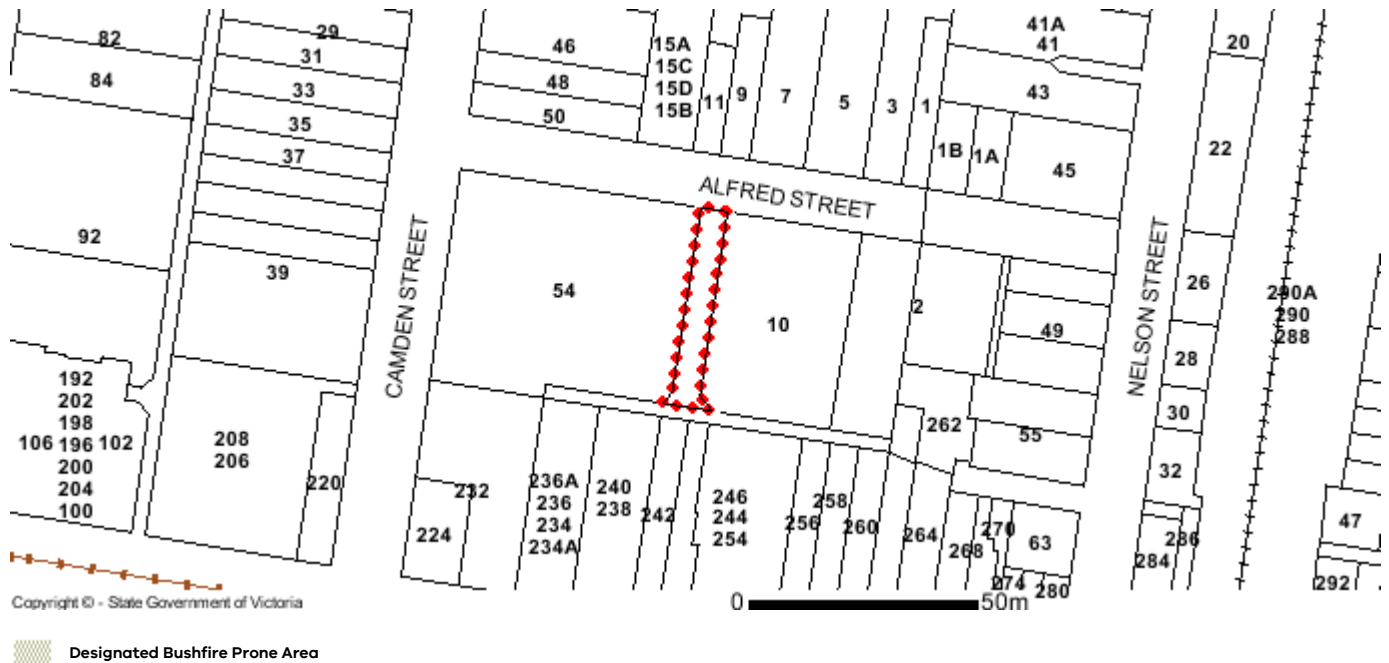
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For Planning Scheme Provisions in bushfire areas visit <https://www.planning.vic.gov.au>

From www.planning.vic.gov.au on 10 December 2018 08:19 PM

PROPERTY DETAILS

Address: **2-8 ALFRED STREET BALACLAVA 3183**
 Lot and Plan Number: **Lot 1 TP748693**
 Standard Parcel Identifier (SPI): **1\TP748693**
 Local Government Area (Council): **PORT PHILLIP** www.portphillip.vic.gov.au
 Council Property Number: **198105**
 Planning Scheme: **Port Phillip** planning-schemes.delwp.vic.gov.au/schemes/portphillip
 Directory Reference: **Melway 2P H9**

This property has 2 parcels. For full parcel details get the free Basic Property report at [Property Reports](#)

UTILITIES

Rural Water Corporation: **Southern Rural Water**
 Melbourne Water Retailer: **South East Water**
 Melbourne Water: **inside drainage boundary**
 Power Distributor: **CITIPOWER**

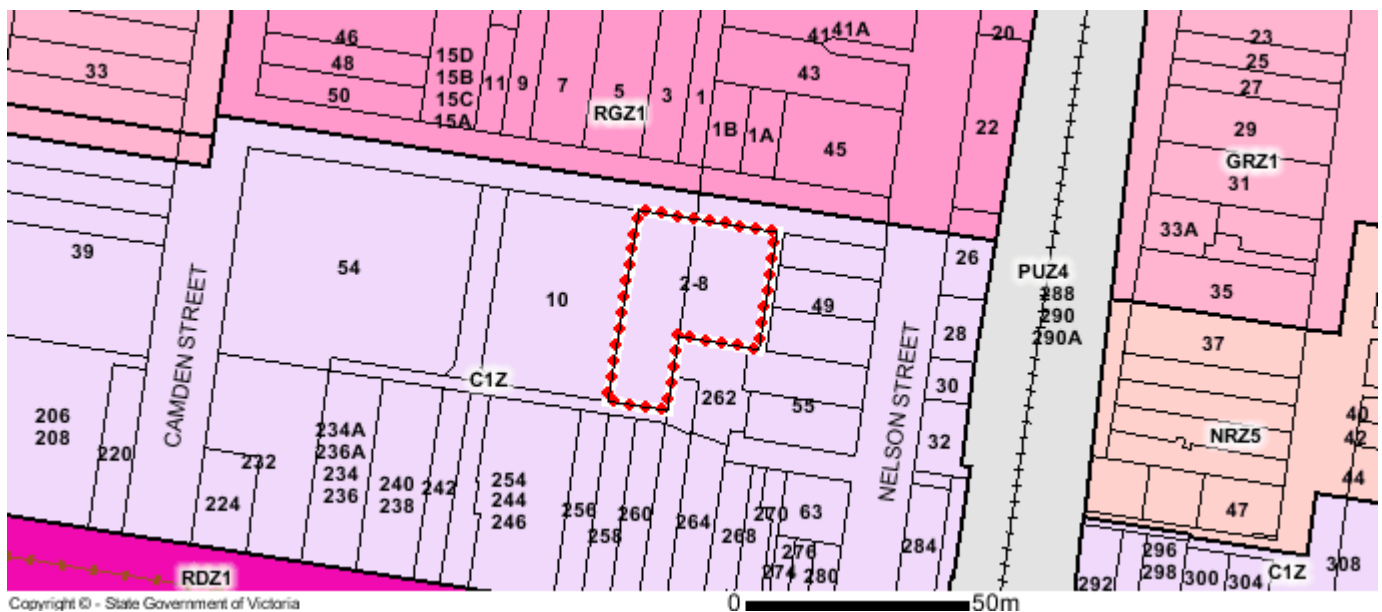
STATE ELECTORATES

Legislative Council: **SOUTHERN METROPOLITAN**
 Legislative Assembly: **CAULFIELD**

Planning Zones

[COMMERCIAL 1 ZONE \(C1Z\)](#)

[SCHEDULE TO THE COMMERCIAL 1 ZONE \(C1Z\)](#)



- C1Z - Commercial 1
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Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

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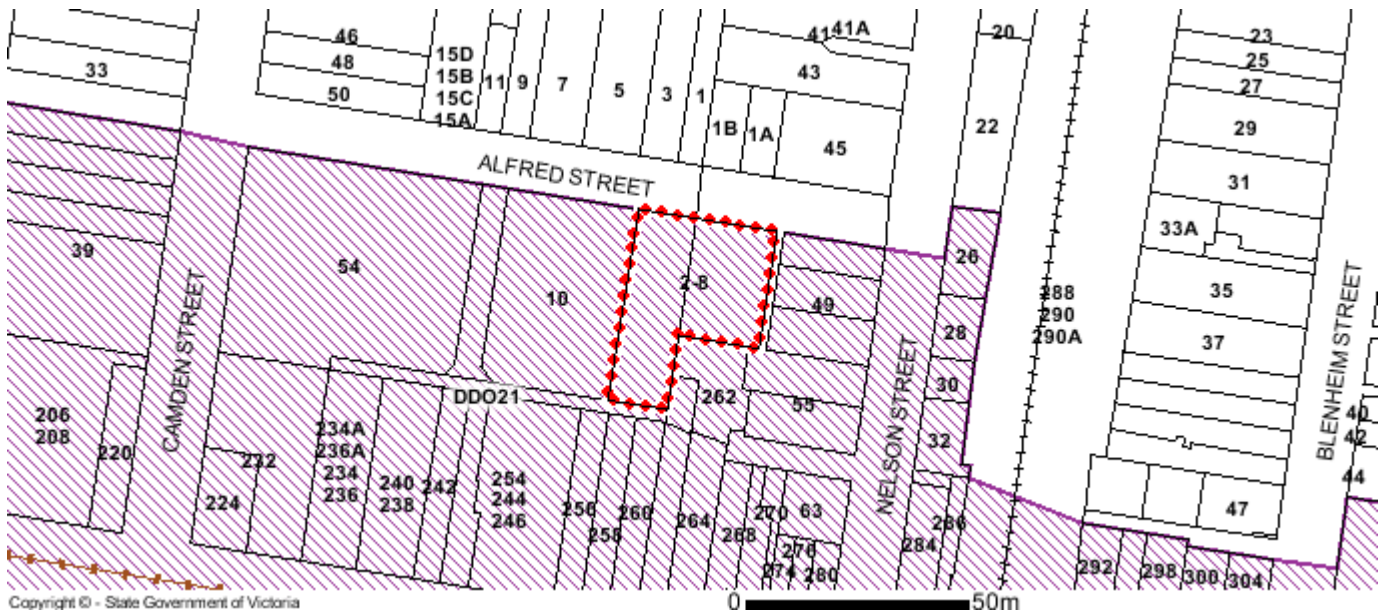
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Planning Overlays

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DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 21 (DDO21)



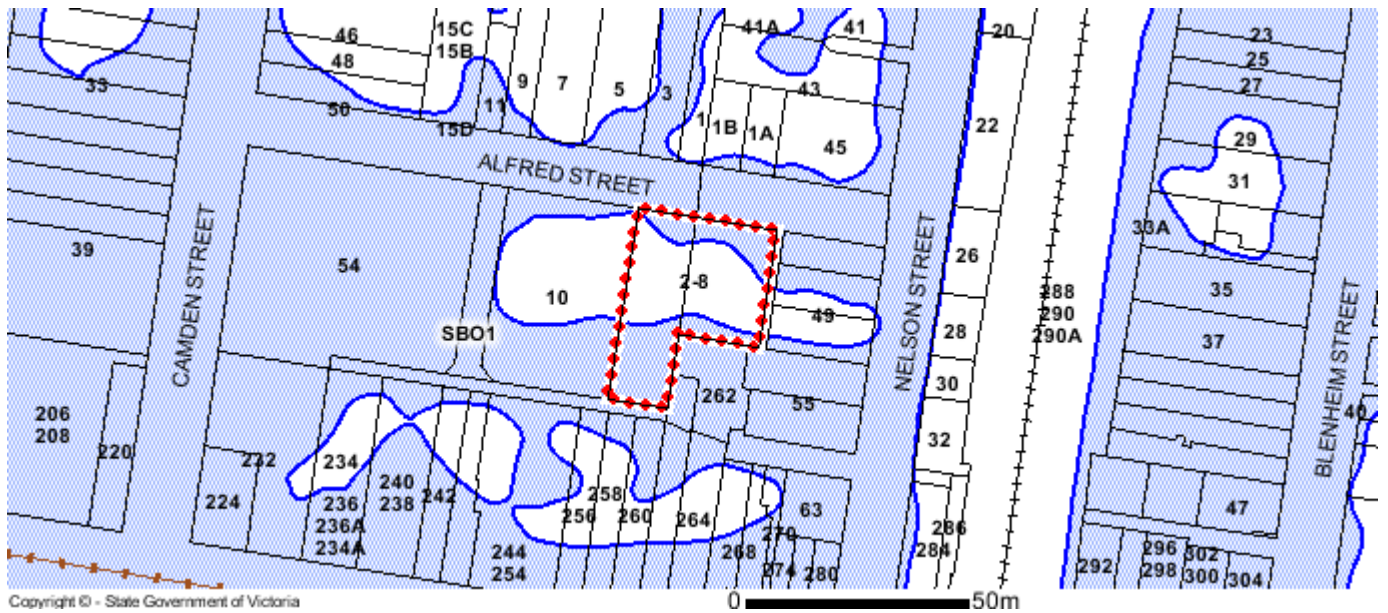
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DDO - Design and Development

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SPECIAL BUILDING OVERLAY (SBO)

SPECIAL BUILDING OVERLAY - SCHEDULE 1 (SBO1)



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SBO - Special Building

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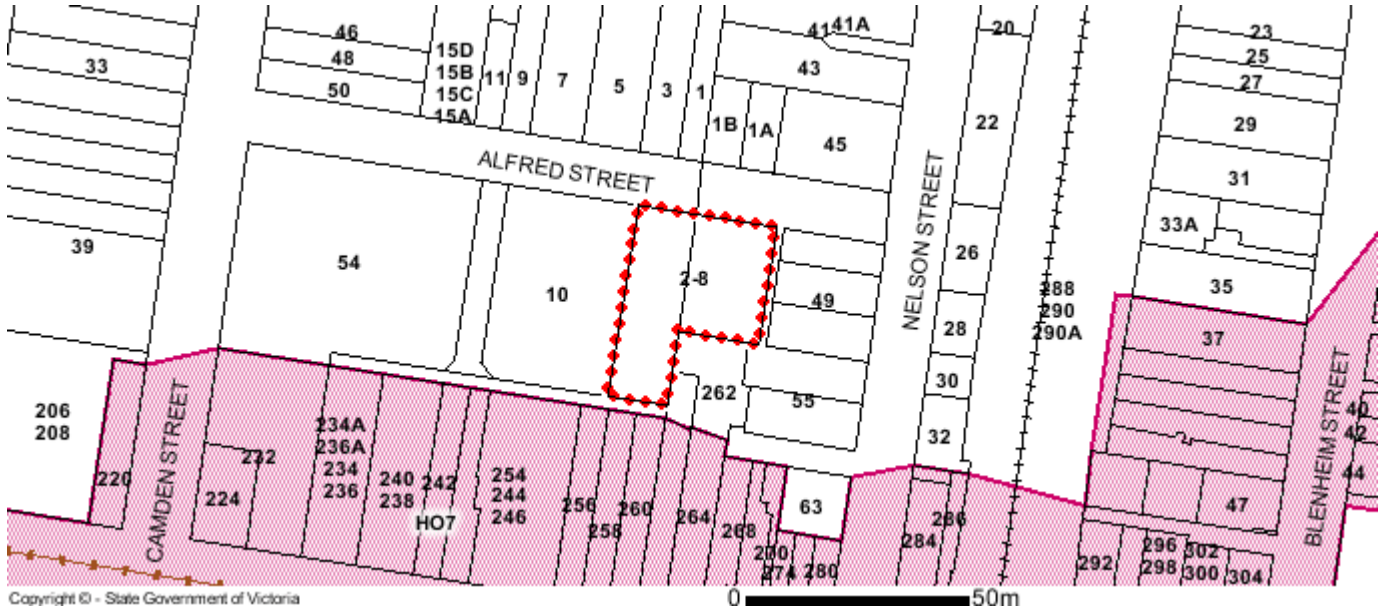
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Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

HERITAGE OVERLAY (HO)



 HO - Heritage

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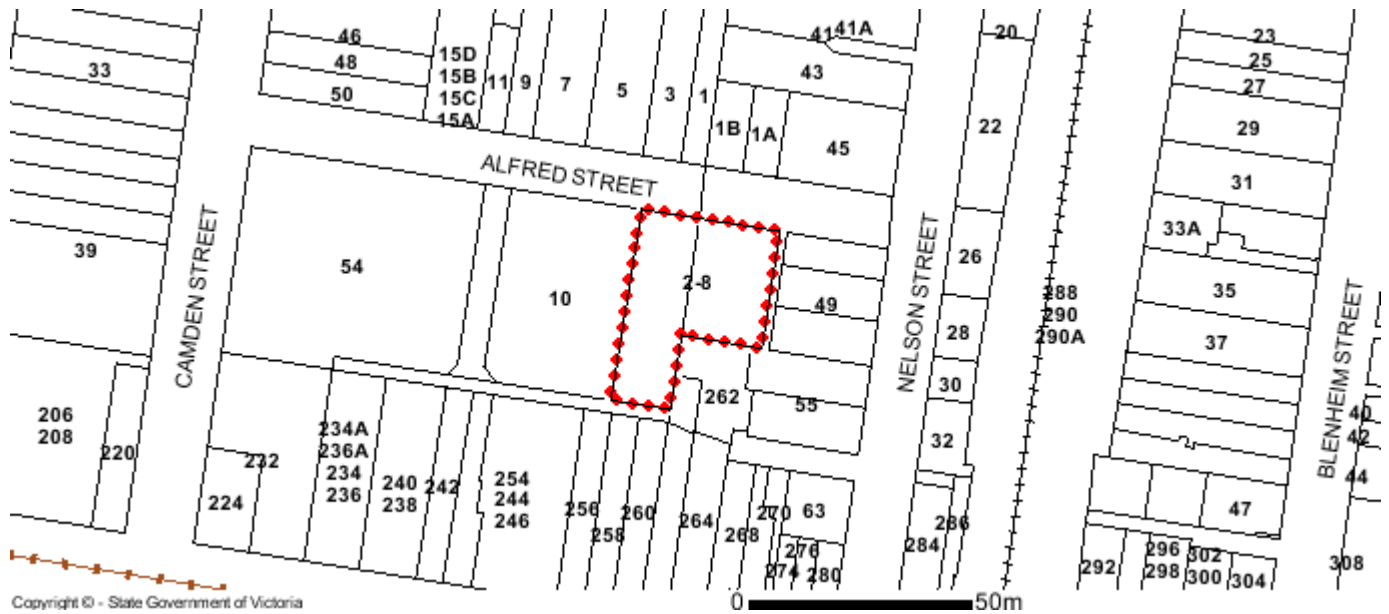
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From www.planning.vic.gov.au on 10 December 2018 08:20 PM

PROPERTY DETAILS

Address: **49-53 NELSON STREET BALACLAVA 3183**
 Lot and Plan Number: **Lot 1 TP232252**
 Standard Parcel Identifier (SPI): **1\TP232252**
 Local Government Area (Council): **PORT PHILLIP** www.portphillip.vic.gov.au
 Council Property Number: **204376**
 Planning Scheme: **Port Phillip** planning-schemes.delwp.vic.gov.au/schemes/portphillip
 Directory Reference: **Melway 2P H9**

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UTILITIES

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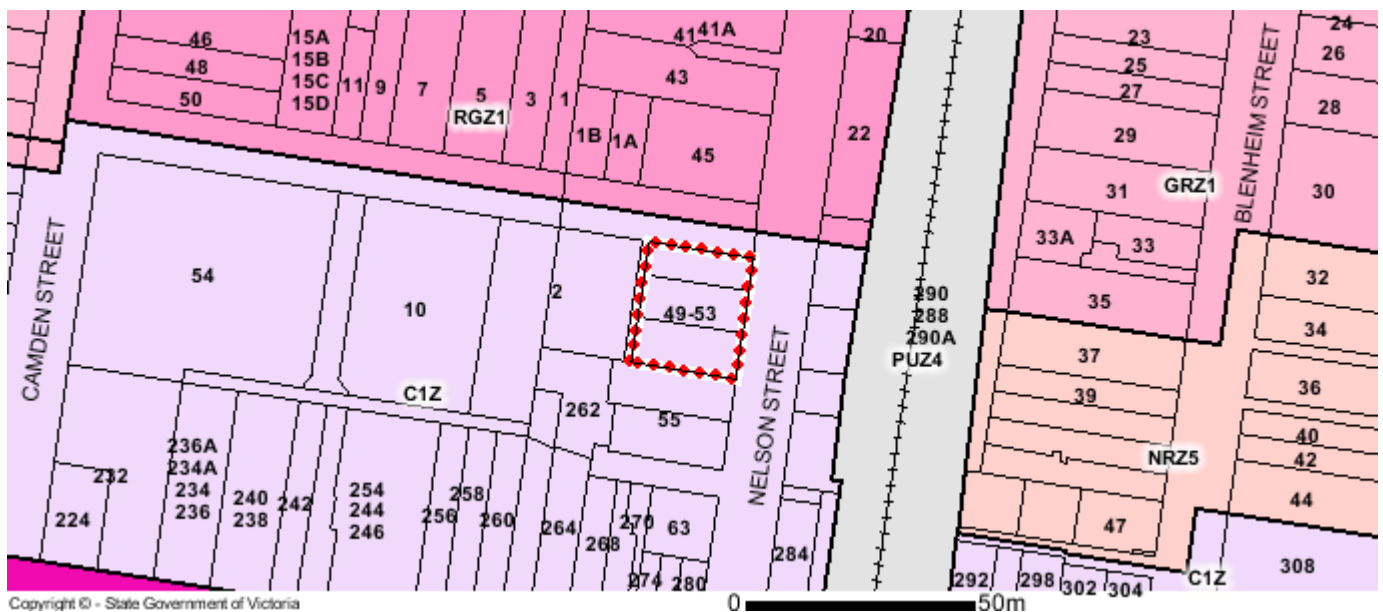
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[COMMERCIAL 1 ZONE \(C1Z\)](#)

[SCHEDULE TO THE COMMERCIAL 1 ZONE \(C1Z\)](#)



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- | | | | | | |
|--|-------------------------------|--|---------------------------|--|---------------------------------|
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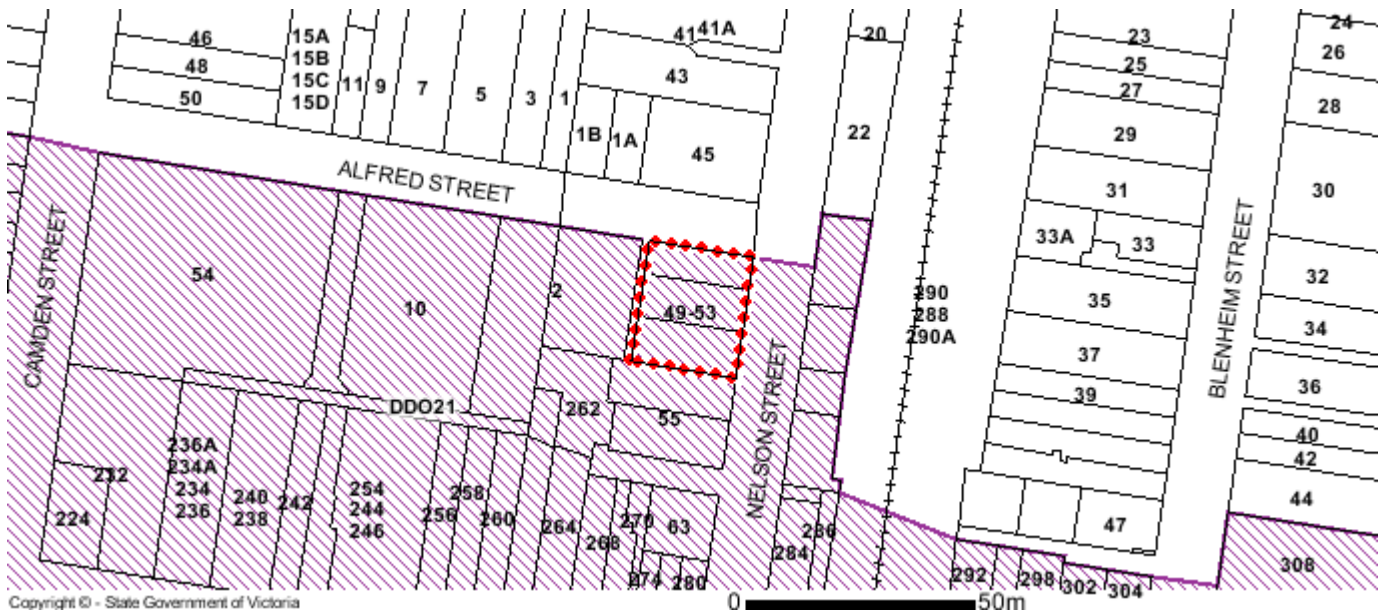
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DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 21 (DDO21)



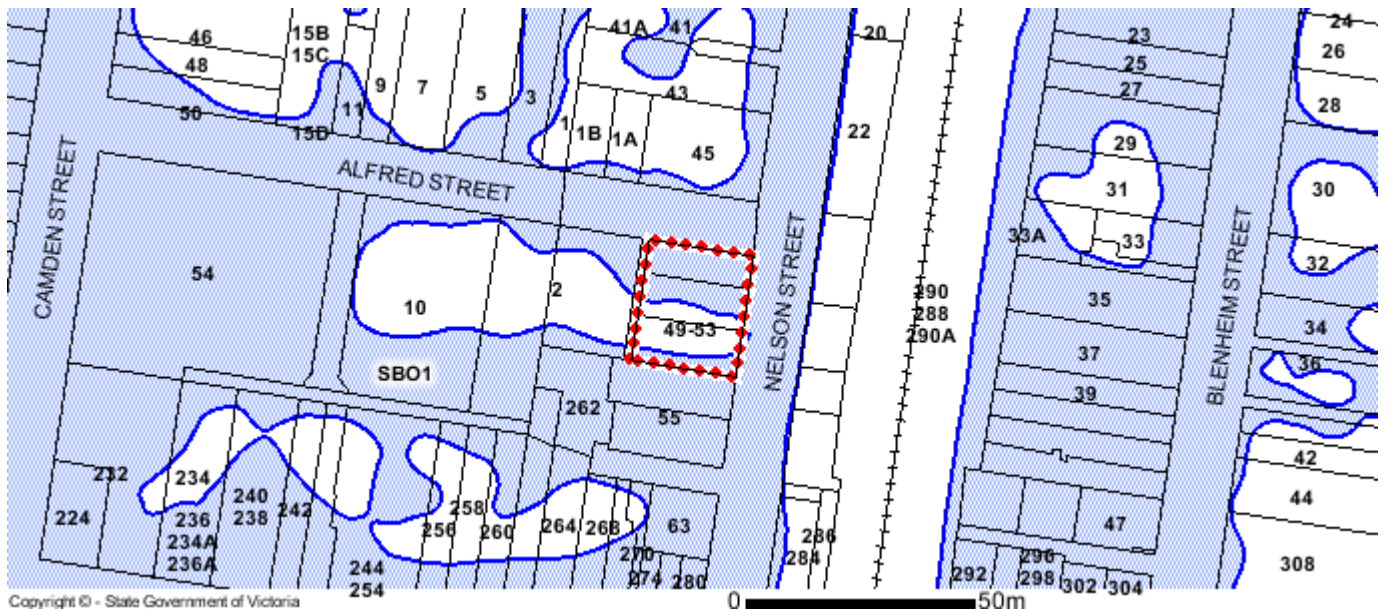
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DDO - Design and Development

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SPECIAL BUILDING OVERLAY - SCHEDULE 1 (SBO1)



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SBO - Special Building

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Appendix B: Site Photographs



Photo 1. View from of northeast corner of site facing south along Nelson Street (Parcel 4).



Photo 2. View southwest from near the northeast corner of site showing the rear of the off-site commercial properties fronting Carlisle Street (Parcel 4).



Photo 3. View north across site towards Alfred Street with residential properties of various ages visible off-site (between Parcels 3 & 4).



Photo 4. View from eastern portion of site east towards Coles supermarket back dock (Parcel 3).



Photo 5. View southwest across site showing the rear of some older commercial/residential buildings fronting Carlisle Street (Parcel 3).



Photo 6. View of the eastern portion of the site (49-53 Nelson Street) facing south from across Alfred Street (offsite to the north) (Parcel 4).



Photo 7. View south along easement portion of the site (concreted section of pavement used as Coles supermarket back dock access and bin storage (Parcel 2).



Photo 8. View from offsite facing southwest across Camden Street to western-most portion of site, used as Woolworths supermarket carpark (Parcel 1).



Photo 9. Bluestone-paved laneway offsite along western boundary (Parcel 1).



Photo 10. Open gatic of groundwater well MW01 visible at rear of field vehicle (Parcel 1).



Photo 11. Commercial frontage along Carlisle Street offsite to the south.



Photo 12. Commercial building along Carlisle Street offsite to the south with the date 1886 plastered on facade.



Photo 13. Soil cuttings sampled from location SB01.



Photo 14. Soil cuttings sampled from location SB02.



Photo 14. Soil cuttings sampled from location SB06.



Photo 15. Older weathered asphalt becoming crushed rock fill within SB06.



Photo 16. Drill cuttings sampled from location SB07 showing gravelly fill then underlying clays and sands.



Appendix C: Groundwater Database Search

Bore ID	Longitude (GDA94)	Latitude (GDA94)	Easting (MGA)	Northing (MGA)	Map zone	Constructed depth	Bore type	Use 1	Driller	Drilling Method
142878	144.994668	-37.86801	323613.2	5806934.09	55	5	Groundwater	Groundwater Investigation	BARNES S	Mechanical Auger
142880	144.994668	-37.86801	323613.2	5806934.09	55	5	Groundwater	Groundwater Investigation	BARNES S	Mechanical Auger
142881	144.994668	-37.86801	323613.2	5806934.09	55	8	Groundwater	Groundwater Investigation	BARNES S	Mechanical Auger
326124	144.996138	-37.873334	323755.2	5806346.09	55	14.5	Groundwater	Non Groundwater	NOT KNOWN	
326125	144.996138	-37.873334	323755.2	5806346.09	55	14.02	Groundwater	Non Groundwater	NOT KNOWN	
326126	144.996138	-37.873334	323755.2	5806346.09	55	9.14	Groundwater	Non Groundwater	NOT KNOWN	
326127	144.996138	-37.873334	323755.2	5806346.09	55	3.04	Groundwater	Non Groundwater	NOT KNOWN	
326128	144.996138	-37.873334	323755.2	5806346.09	55	14.32	Groundwater	Non Groundwater	NOT KNOWN	
326129	144.996138	-37.873334	323755.2	5806346.09	55	12.8	Groundwater	Non Groundwater	NOT KNOWN	
326130	144.996138	-37.873334	323755.2	5806346.09	55	10.66	Groundwater	Non Groundwater	NOT KNOWN	
326131	144.996138	-37.873334	323755.2	5806346.09	55	5.79	Groundwater	Non Groundwater	NOT KNOWN	
326132	144.996138	-37.873334	323755.2	5806346.09	55	3.35	Groundwater	Non Groundwater	NOT KNOWN	
326133	144.996138	-37.873334	323755.2	5806346.09	55	2.13	Groundwater	Non Groundwater	NOT KNOWN	
326134	144.996138	-37.873334	323755.2	5806346.09	55	2.13	Groundwater	Non Groundwater	NOT KNOWN	
326135	144.996138	-37.873334	323755.2	5806346.09	55	1.22	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326136	144.996138	-37.873334	323755.2	5806346.09	55	4.27	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326137	144.996138	-37.873334	323755.2	5806346.09	55	2.44	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326138	144.996138	-37.873334	323755.2	5806346.09	55	3.05	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326139	144.996138	-37.873334	323755.2	5806346.09	55	3.05	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326140	144.996138	-37.873334	323755.2	5806346.09	55	1.83	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326141	144.996138	-37.873334	323755.2	5806346.09	55	3.05	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326142	144.996138	-37.873334	323755.2	5806346.09	55	3.05	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326143	144.996138	-37.873334	323755.2	5806346.09	55	2.9	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326144	144.996138	-37.873334	323755.2	5806346.09	55	3.35	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326145	144.996138	-37.873334	323755.2	5806346.09	55	2.9	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326146	144.996138	-37.873334	323755.2	5806346.09	55	2.9	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326147	144.996138	-37.873334	323755.2	5806346.09	55	3.05	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326148	144.996138	-37.873334	323755.2	5806346.09	55	2.44	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326150	144.996138	-37.873334	323755.2	5806346.09	55	2.44	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326151	144.996138	-37.873334	323755.2	5806346.09	55	2.44	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326152	144.996138	-37.873334	323755.2	5806346.09	55	3.66	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326153	144.996138	-37.873334	323755.2	5806346.09	55	3.35	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326154	144.996138	-37.873334	323755.2	5806346.09	55	2.67	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326155	144.996138	-37.873334	323755.2	5806346.09	55	3.66	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326156	144.996138	-37.873334	323755.2	5806346.09	55	1.45	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326157	144.996138	-37.873334	323755.2	5806346.09	55	1.22	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326158	144.996138	-37.873334	323755.2	5806346.09	55	1.98	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326159	144.996138	-37.873334	323755.2	5806346.09	55	1.98	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326160	144.996138	-37.873334	323755.2	5806346.09	55	4.57	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
326161	144.996138	-37.873334	323755.2	5806346.09	55	4.65	Groundwater	SEC Bores (Use unidentified)	NOT KNOWN	
88739	145.000574	-37.8682	324133.2	5806924.09	55	56	Groundwater	Domestic	SAMMASSIMO F	Down-Hole Hammer Percussion
WRK046975	144.986227	-37.868146	322871	5806903	55	49.9	Groundwater	Domestic and Stock	HOGAN DAVID	Mechanical Auger
WRK971361	144.98319	-37.86403	322594	5807354	55	25	Groundwater		NOT KNOWN	
WRK979085	145.00016	-37.872079	324106	5806493	55	30	Groundwater		NOT KNOWN	
WRK979680	145.000168	-37.873043	324109	5806386	55	60	Groundwater		NOT KNOWN	
WRK982293	144.983187	-37.864165	322594	5807339	55	30	Groundwater		NOT KNOWN	
WRK982713	144.987674	-37.870938	323005	5806596	55	150	Groundwater		NOT KNOWN	
WRK984477	144.988137	-37.86689	323036	5807046	55	5.1	Groundwater	Groundwater Investigation	NOT KNOWN	Mechanical Auger
WRK986245	144.984265	-37.864238	322689	5807333	55	25	Groundwater		NOT KNOWN	
WRK990237	144.984584	-37.864604	322718	5807293	55	150	Groundwater		NOT KNOWN	



Appendix D: Nearby GQRUZ Maps

Groundwater zone with restricted uses

ST KILDA

This zone has been cleaned up to the relevant environmental standards (section 53X environmental audit) but is still subject to restricted groundwater uses.

Environmental audit site

433 INKERMAN ST ST KILDA VIC 3182






Restrictions on use

- Drinking water
- Livestock water supply
- Irrigation of crops (including domestic gardens) and parks
- Water used for recreational purposes (e.g. swimming)

Site history

Service station/fuel storage

Legend

-  Environmental audit site
-  Groundwater zone with restricted uses
-  Properties
-  Unit/house/building number
-  Primary road



Disclaimer: The map represents an approximate estimation of an area where groundwater quality has been impacted by human activities. It does not provide information on the naturally occurring quality of groundwater, which can also have restrictions on its use. The environmental audit boundary and groundwater zone are based on land parcel boundaries at the time of mapping. Subsequent changes to land parcel boundaries do not change the location of the zone.



0 25 50 Metres

EPA CARMS ID: 62611-3
EPA IBIS ID: 7000280
Map generated on: 15 Nov 2018

This map may also contain data from:



For more information contact 1300 EPA VIC

Groundwater zone with restricted uses

ST KILDA EAST

This zone has been cleaned up to the relevant environmental standards (section 53X environmental audit) but is still subject to restricted groundwater uses.

Environmental audit site

160 HOTHAM ST ST KILDA EAST VIC 3183






Restrictions on use

- Drinking water
- Livestock water supply
- Water used for recreational purposes (e.g. swimming)

Site history

Service station/fuel storage

Legend

-  Environmental audit site
-  Groundwater zone with restricted uses
-  Properties
-  Unit/house/building number
-  Primary road



Disclaimer: The map represents an approximate estimation of an area where groundwater quality has been impacted by human activities. It does not provide information on the naturally occurring quality of groundwater, which can also have restrictions on its use. The environmental audit boundary and groundwater zone are based on land parcel boundaries at the time of mapping. Subsequent changes to land parcel boundaries do not change the location of the zone.



0 25 50 Metres

EPA CARMS ID: 70169-1
EPA IBIS ID: 700654
Map generated on: 15 Nov 2018

This map may also contain data from:



For more information contact 1300 EPA VIC

Groundwater zone with restricted uses

ST KILDA

This zone has been cleaned up to the relevant environmental standards (section 53X environmental audit) but is still subject to restricted groundwater uses.

Environmental audit site

30 INKERMAN ST ST KILDA VIC 3182






Restrictions on use

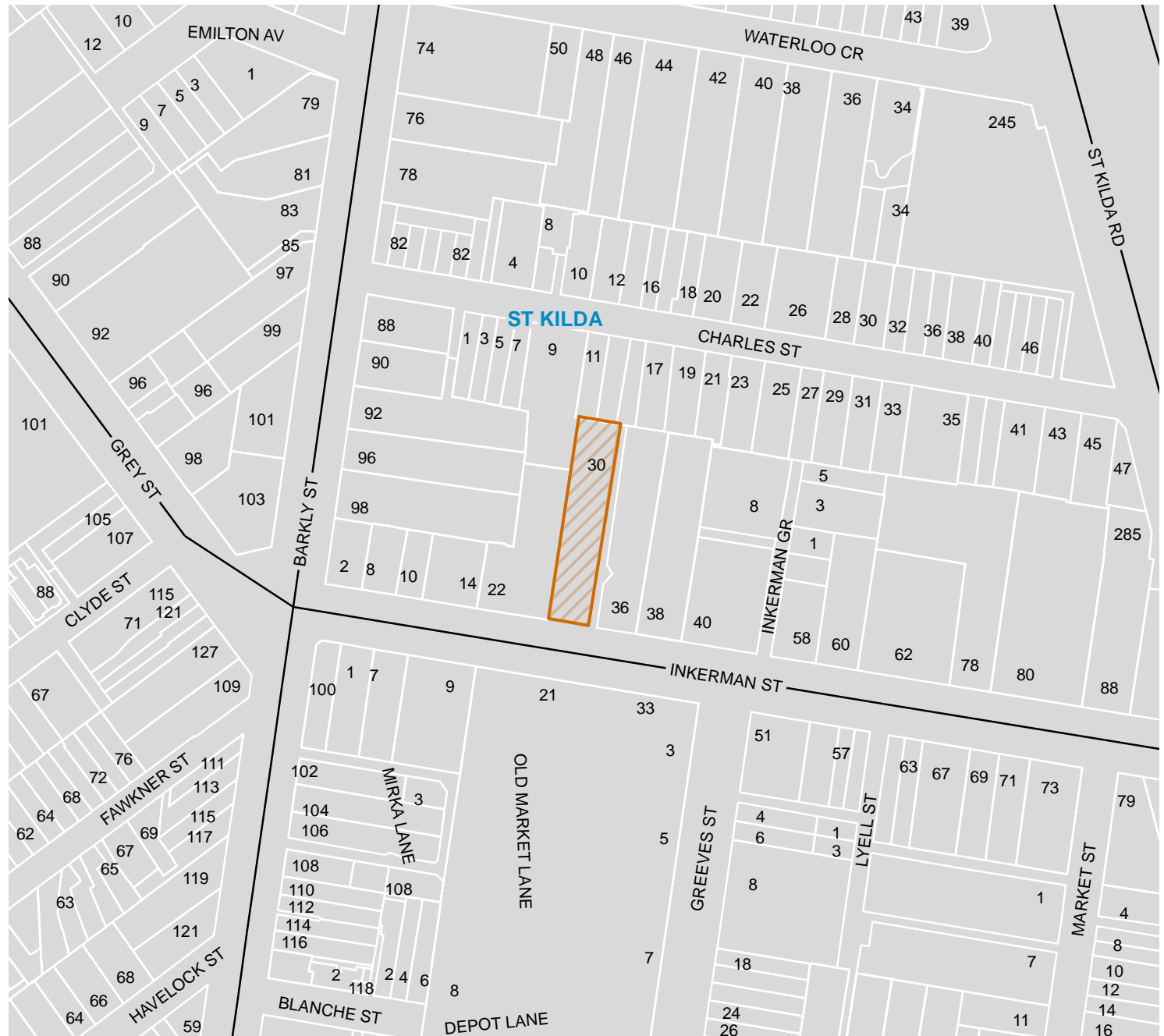
- Drinking water
- Irrigation of crops (including domestic gardens) and parks
- Water used for recreational purposes (e.g. swimming)
- Water used for industrial purposes

Site history

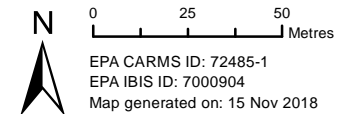
Mixed commercial use

Legend

-  Environmental audit site
-  Groundwater zone with restricted uses
-  Properties
-  452 Unit/house/building number
-  Primary road



Disclaimer: The map represents an approximate estimation of an area where groundwater quality has been impacted by human activities. It does not provide information on the naturally occurring quality of groundwater, which can also have restrictions on its use. The environmental audit boundary and groundwater zone are based on land parcel boundaries at the time of mapping. Subsequent changes to land parcel boundaries do not change the location of the zone.



This map may also contain data from:



For more information contact 1300 EPA VIC

Groundwater zone with restricted uses

ST KILDA

This zone has been cleaned up to the relevant environmental standards (section 53X environmental audit) but is still subject to restricted groundwater uses.

Environmental audit site

40 - 44 PAKINGTON ST ST KILDA VIC 3182






Restrictions on use

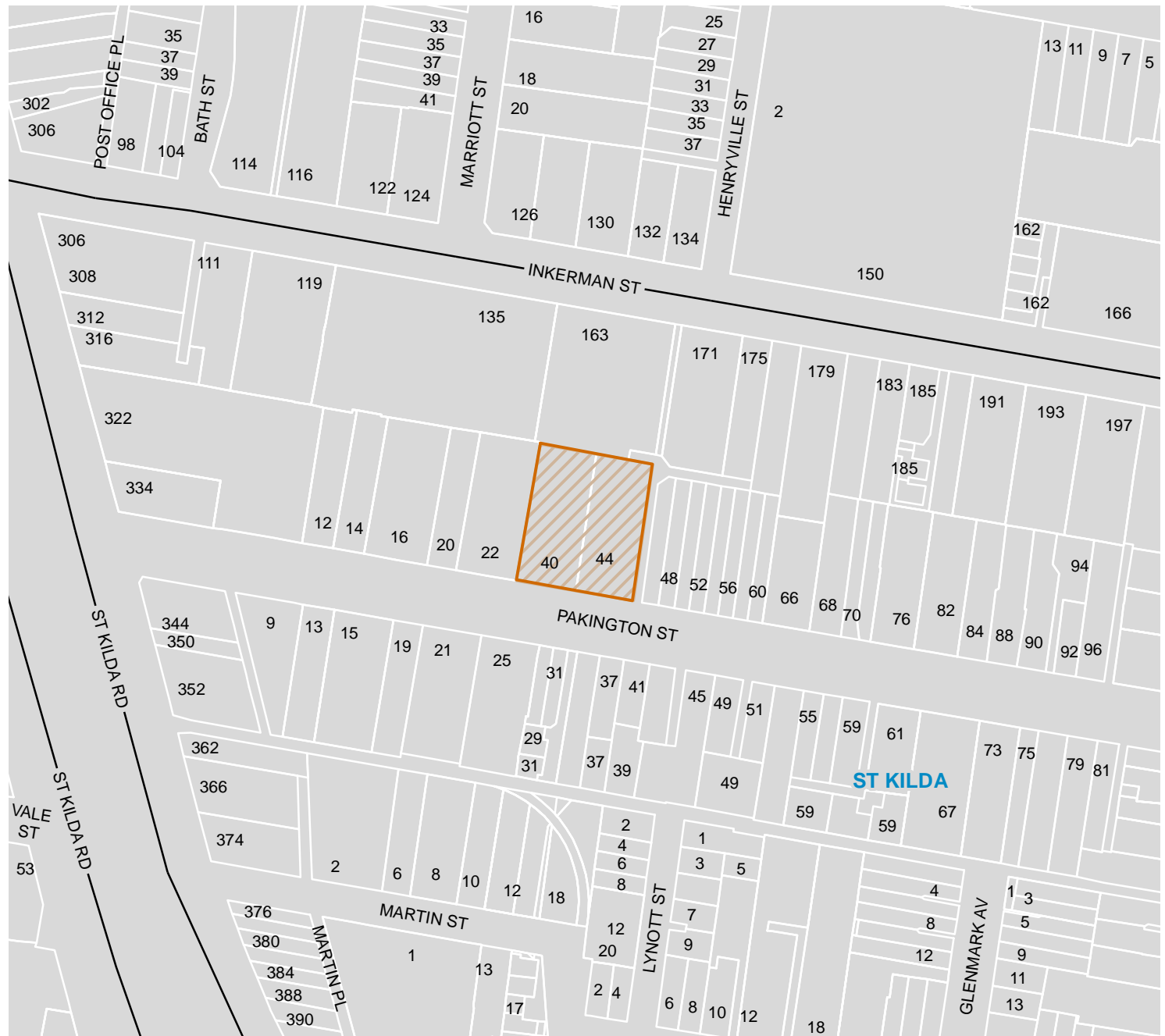
- Drinking water
- Irrigation of crops (including domestic gardens) and parks
- Water used for recreational purposes (e.g. swimming)
- Water used for industrial purposes

Site history

Commercial

Legend

-  Environmental audit site
-  Groundwater zone with restricted uses
-  Properties
-  Unit/house/building number
-  Primary road



Disclaimer: The map represents an approximate estimation of an area where groundwater quality has been impacted by human activities. It does not provide information on the naturally occurring quality of groundwater, which can also have restrictions on its use. The environmental audit boundary and groundwater zone are based on land parcel boundaries at the time of mapping. Subsequent changes to land parcel boundaries do not change the location of the zone.



0 25 50 Metres

EPA CARMS ID: 73000-1
EPA IBIS ID: 7001158
Map generated on: 15 Nov 2018

This map may also contain data from:



For more information contact 1300 EPA VIC

Groundwater zone with restricted uses

BALACLAVA

This zone has been cleaned up to the relevant environmental standards (section 53X environmental audit) but is still subject to restricted groundwater uses.

Environmental audit site

308 CARLISLE ST BALACLAVA VIC 3183






Restrictions on use

- Drinking water
- Livestock water supply
- Irrigation of crops (including domestic gardens) and parks
- Water used for recreational purposes (e.g. swimming)
- Water used for industrial purposes

Site history

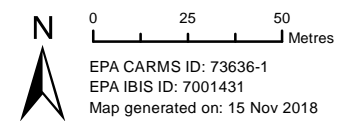
Service station/fuel storage

Legend

-  Environmental audit site
-  Groundwater zone with restricted uses
-  Properties
-  Unit/house/building number
-  Primary road



Disclaimer: The map represents an approximate estimation of an area where groundwater quality has been impacted by human activities. It does not provide information on the naturally occurring quality of groundwater, which can also have restrictions on its use. The environmental audit boundary and groundwater zone are based on land parcel boundaries at the time of mapping. Subsequent changes to land parcel boundaries do not change the location of the zone.



This map may also contain data from:



For more information contact 1300 EPA VIC



Appendix E: Site History Searches



ROYAL HISTORICAL SOCIETY OF VICTORIA INC.

239 A'Beckett Street, Melbourne 3000

Date: 13 November 2018
Attention: Sam O'Connor
Company: Senversa
From: Rosemary Cameron (Executive Officer)

NOTE: Email address: sitesearch@historyvictoria.org.au

SITE SEARCH:

39 Camden Street, easement, 2-8 Alfred Street & 49 Nelson Street, Balaclava

This search relates to 4 sites that are close to each other; located on the south side of Alfred Street between Nelson Street and Camden Street (with 39 Camden Street to the west of this block).

A recent Google image shows that the sites all appear to be used for off street car parking associated with the commercial uses in this area.

The area, where the sites are located, was within the suburb of St Kilda up until the 1950s when it became known as Balaclava.

The area developed in the 1880s onwards however street numbers were not adopted until around 1900.

In 1900 the Sands & McDougall Directory notes that 39 Camden Street was occupied by E Fitch with 37 H Foster (on the north side of 39), 41 W Lawrence (on the south side of 39), 43 E Gardiner, 45 A McDonnell and 47 H Tinsley then Carlisle Street. This suggests they were residential properties with individual houses at that time.

In 1900 the south side of Alfred Street (between Nelson Street and Camden Street) contained 8 surnames of properties (without street numbers) suggesting there were 8 house along that section of Alfred Street.

In 1900 the site at 49 Nelson Street (on the south east corner with Alfred Street) was listed as T White, with properties to the south being 51 Miss M Scott, 53 H Smith, 55 J Rickards, 57 C Swinburne & Cuthbert carpenter and joiner, 59 E Stone farrier and 63 J Rickards Produce Merchant then Carlisle Street.



ROYAL HISTORICAL SOCIETY OF VICTORIA INC.

239 A'Beckett Street, Melbourne 3000

The 1922 directory has the following listings:

39 Camden Mrs B Walsh
2 Alfred H Ball
4 Alfred Mrs M McAlister
6 J Braithwaite
8 T Deayton
10 Mrs Bear-Schneider
12a Angus Scott
12 C Davis
14 C Young through to 16, 18, 20 & 22 then Camden Street
49 Nelson Street S Trevan
51 C Hampson

The 1940 Directory:

39 Camden D Anderson
2 Alfred J Clay
4 F Maisham
6 D Birchmore
8 W Johnson
10 J Fowler
12a E Irvine
14 W Rundle through to 16, 18, 20, 22 & 24 then Camden Street
49 Nelson W Hunter
51 J Simmonds

The 1954 directory:

39 Camden J Taylor
2 Alfred J Clay
4 F Maisham
6 W Jones
8 W Johnston
10 E O'Toole
12a E Irving
14 W Rundle and 16, 18, 20, 22 & 24 then Camden Street
49 Nelson W Hunter
51 H Jones



ROYAL HISTORICAL SOCIETY OF VICTORIA INC.

239 A'Beckett Street, Melbourne 3000

The 1964 directory:

39 Camden J Taylor
2-4 Alfred Street Prahran City Council shoppers' car park
6 W Jones
8 W Johnston
10 L O'Toole
12a C Bailey
14 W Rundle and 16, 18, 20, 22 & 24 then Camden.
49 Nelson Miss E Wells
51 N/A

The 1974 directory (the final edition of the Sands & McDougall Directory):

39 Camden J Taylor
2-4 Alfred Street Prahran City Council shoppers' car park
6 W Jones
8 W Johnston
10 N/A
12 A Lazzarone
14 J Neville and 16, 18, 20, 22 & 24 then Camden
49 Nelson G Giannaris
51 Nelson N/A
53 Nelson Prahran City Council shoppers' car park

It is difficult to precisely identify the history of the easement between 54 Camden Street and 10 Alfred Street. However there appears to have been a dwelling at 12a Alfred Street for many years, in a street that contained mostly single dwellings along the south side of the street for a long time.

54 Camden Street appears to have originally been the address for a much smaller lot as the Alfred Street sites (from 10, 12a, 14, 16, 18, 20, 22 & 24) ran the full length of the south side of Alfred Street, from Nelson Street to Camden Street, for many years.

Research by Greg Buchanan

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Tel: (03) 9326 9288

Fax: (03) 9326 9477

Email: sitesearch@historyvictoria.org.au ABN 36 520 675 471 Reg. No: A2529

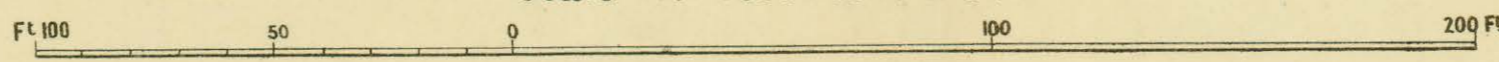
Find out more about us on our website: www.historyvictoria.org.au

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

CITY OF ST. KILDA

DETAIL PLAN NO 1424

Scale 40 Feet to 1 Inch



W. J. Woods
ENGINEER IN CHIEF.
4.2.55

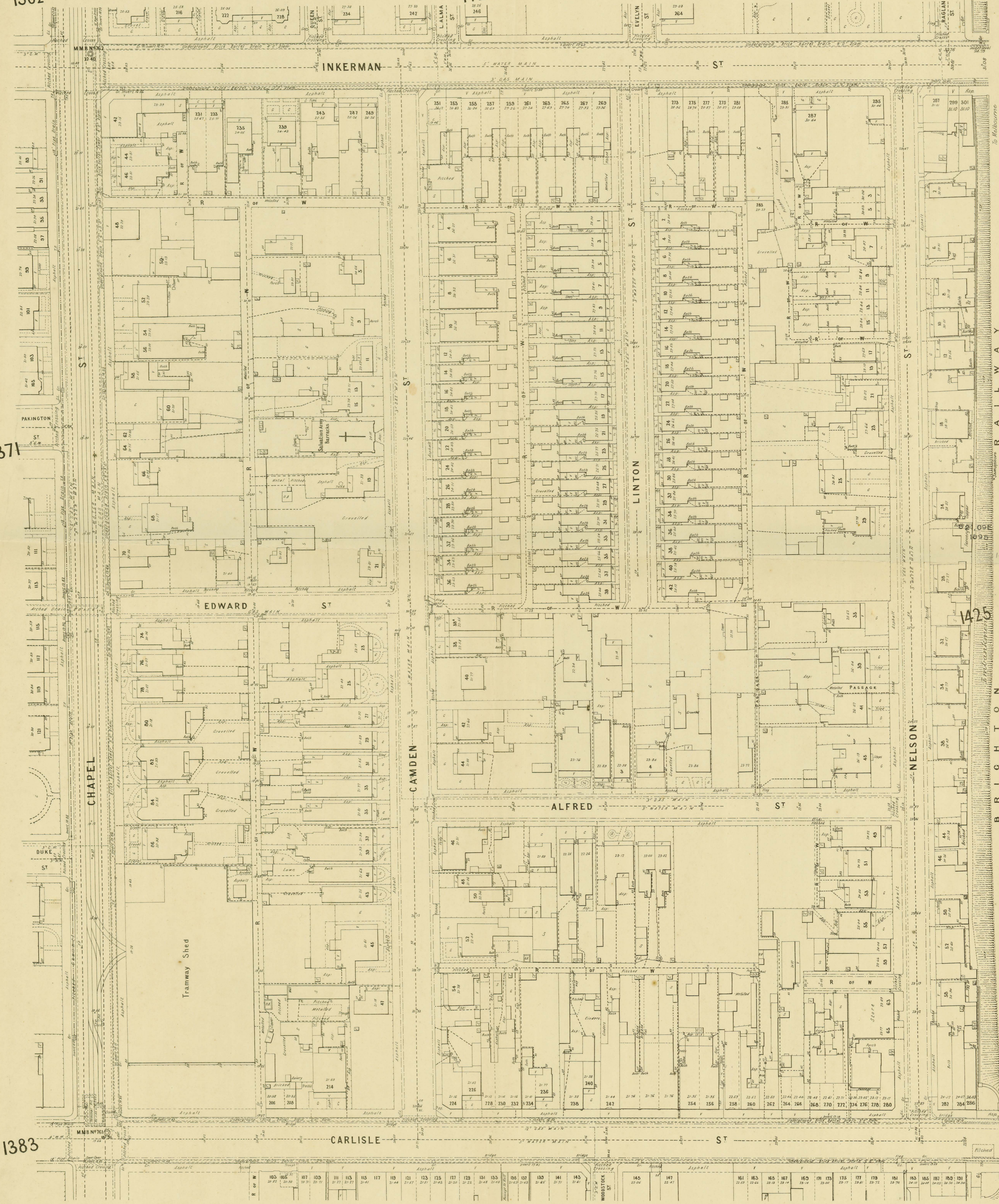


1362

1423

1371

1425



1383

1439

1424
620 BUE T
1937
1425
from Brighton

13 November, 2018

To: Sam O'Connor
Senversa Pty Ltd

T: 9606 0070

SEARCH FOR CATHODIC PROTECTION SYSTEMS

With reference to your email of 9/11/2018, a search of the CP database has failed to identify any cathodic protection systems that have been registered at the following locations:

- **39 Camden Street, Balaclava**
- **Easement between 54 Camden Street & 10 Alfred Street, Balaclava**
- **2-8 Alfred Street, Balaclava**
- **49 Nelson Street, Balaclava**

Yours sincerely



Peter Wade
MANAGER ELECTROLYSIS MITIGATION

Disclaimer

Energy Safe Victoria provides this information in good faith, but cannot guarantee the accuracy or validate the information provided. The Cathodic Protection (CP) database is a register of currently operating Cathodic Protection systems in Victoria and was established in 1970. The CP database is administered under the Electricity Safety Act 1998 and the Electricity Safety (Cathodic Protection) Regulations 2009.

Some underground fuel tanks may not be listed in the CP database including: if the tank is not metallic (therefore not requiring CP); the tank is metallic but CP was not installed; the CP system was not registered, or the CP system has been de-commissioned.

If you believe underground tanks may be present and not shown on ESV's database you should conduct your own tests and investigations.

Samuel O'Connor

From: licensing@worksafe.vic.gov.au
Sent: Friday, 23 November 2018 12:10 PM
To: Samuel O'Connor
Subject: Re: FOI - Dangerous Good Register
Attachments: 1C797947.gif; Worksafe_FOI.pdf; Purchase Order.pdf; Map.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Samuel,

I refer to your email below and confirm that we have searched our database records for the indicated addresses.

I advise that WorkSafe Victoria has **not** found any record of Dangerous Goods Storage and Handling for the premises.

For any further information please do not hesitate to contact the Licensing Branch on 03 8663 5218.

Kind Regards,

Josie
Senior Licensing
Officer

licensing@worksafe.vic.gov.au
Tel/ 1800 136 089 or 9641 1444

Head Office, 1 Malop Street
Geelong VIC 3220
www.worksafe.vic.gov.au



Licensing information and advice is prepared in the context of the information you have provided in your email. Whilst care has been taken to provide accurate information and advice, we have not endeavoured to advise on all possible contingencies and therefore not intended for other situations or circumstances, as this may affect this advice.

Prior to acting upon any information or advice offered by Licensing, you will need to consider your individual circumstances to determine the application of the advice to any additional statutory obligation or duty relevant to your query.

BE GREEN, READ FROM THE SCREEN

▼ Samuel O'Connor ---13/11/2018 11:49:58 AM---Samuel O'Connor <sam.oconnor@senversa.com.au>

Samuel O'Connor
<sam.oconnor@senversa.com.au>

13/11/2018 11:49 AM

To Licence/Field_Services/VWA@WorkCover

cc

Subject FW: FOI - Dangerous Good Register

Hello,

Please find attached permission from the landholder representative to disclose the information requested to Senversa.



Appendix F: Aerial Photographs



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSI\MXD\01_ Working\MXD\M17003_002_APP_historical aerial 1931.mxd



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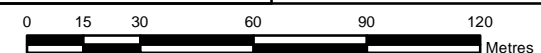


Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend

 Site Boundary

Source:	landata.vic.gov.au	Year:	1931
Drawn:	M. Byrne	Ref:	MP 1931
Checked:		Run/Film/Image:	15/60/2750
Scale:	1:2,000 (A3)	Original Scale:	1:18860



Datum GDA 1994, Projection MGA Zone 55

Appendix:

F

Title: Historical Aerial Photo - 1931

Project: Detailed Site Investigation

Location: Balaclava Retail Renewal Precinct

Client: City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSIMXD0s1_ Working\MXD\S\M17003_002_APP_historical aerial 1945.mxd



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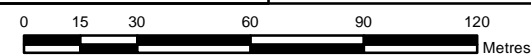


Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend

 Site Boundary

Source:	Melbourne Uni	Year:	1945
Drawn:	M. Byrne	Ref:	-
Checked:		Run/Film/Image:	-
Scale:	1:2,000 (A3)	Original Scale:	-



Datum GDA 1994, Projection MGA Zone 55

Appendix:

F

Title: Historical Aerial Photo - 1945

Project: Detailed Site Investigation

Location: Balaclava Retail Renewal Precinct

Client: City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSIMXD0s1_Working\MXD\M17003_002_APP_historical_aerial_1951.mxd



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Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend
[Red outline] Site Boundary

Source:	landata.vic.gov.au	Year:	1951
Drawn:	M. Byrne	Ref:	MAMP No2
Checked:		Run/Film/Image:	19/1417/21
Scale:	1:2,000 (A3)	Original Scale:	1:12000
<p>0 15 30 60 90 120 Metres</p> <p>Datum GDA 1994, Projection MGA Zone 55</p>			

Appendix:	F
Title:	Historical Aerial Photo - 1951
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSIMXD0s1_Working\MXD\S\M17003_002_APP_historical aerial 1960.mxd



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Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend
[Red Outline] Site Boundary

Source:	landata.vic.gov.au	Year:	1960
Drawn:	M. Byrne	Ref:	MAMP 360
Checked:		Run/Film/Image:	22/1092/40
Scale:	1:2,000 (A3)	Original Scale:	1:9600
<p>Datum GDA 1994, Projection MGA Zone 55</p>			

Appendix:	F
Title:	Historical Aerial Photo - 1960
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M7003_COPP_BALACLAVA_PSNIMXD0s1_1_Working\MXD\M7003_002_APP_historical_aerial_1975.mxd



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Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend
[Red outline] Site Boundary

Source:	landata.vic.gov.au	Year:	1975
Drawn:	M. Byrne	Ref:	M 1974
Checked:		Run/Film/Image:	41E/2946/181
Scale:	1:2,000 (A3)	Original Scale:	1:10000
<p>0 15 30 60 90 120 Metres</p>			
Datum GDA 1994, Projection MGA Zone 55			

Appendix:	F
Title:	Historical Aerial Photo - 1975
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M17003_COPP_BALACLAVA_PSIMXD0s1_ Working\MXD\M17003_002_APP_historical aerial 1986.mxd



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Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend
[Red outline] Site Boundary

Source:	landata.vic.gov.au	Year:	1986
Drawn:	M. Byrne	Ref:	MIS 1823
Checked:		Run/Film/Image:	8/3998/110
Scale:	1:2,000 (A3)	Original Scale:	1:10000
<p>Datum GDA 1994, Projection MGA Zone 55</p>			

Appendix:	F
Title:	Historical Aerial Photo - 1986
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Path: Y:\16_GIS01_Jobs\3.VIC_Jobs\M7003_COPP_BALACLAVA_PSI\MXD0s1_1_Working\MXD0s1\M7003_002_APP_historical aerial 2018.mxd

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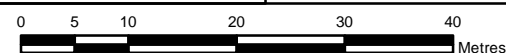


Address: Level 6, 15 William Street
Melbourne VIC 3000
Phone: (03) 9606 0070
Website: www.senversa.com.au

Legend

Site Boundary

Source:	Nearmap	Year:	2018
Drawn:	M. Byrne	Ref:	-
Checked:		Run/Film/Image:	-
Scale:	1:700 (A3)	Original Scale:	-



Datum GDA 1994, Projection MGA Zone 55

Appendix:	F
Title:	Historical Aerial Photo - 2018
Project:	Detailed Site Investigation
Location:	Balaclava Retail Renewal Precinct
Client:	City of Port Phillip



Appendix G: City of Port Phillip and Tonkin and Taylor Reports

Site Contamination Advice

June 2015



Carlisle St Supermarkets Car Parks

Soil Disposal Categorisation Investigation

Executive Summary

A soil disposal categorisation has been undertaken for the car parks of the supermarkets located on Carlisle Street, Balaclava (the site).

The purpose of this investigation was to gain an understanding of the potential offsite disposal categorisation of soil should it be proposed to be excavated. It is understood there are no plans to remove soil from the site at the time of writing this advice. This is not intended to be a categorisation report for the purpose of approval of disposing soil to an EPA licensed facility.

Soil investigation has been undertaken in accordance with Environment Protection Authority (EPA) Victoria's Industrial Waste Resource Guidelines (IWRG) 621 Soil Hazard Categorisation and Management (621) and 702 Soil Sampling (702).

Soil sampling and testing undertaken by the City of Port Phillip identified elevated concentrations of heavy metals and polycyclic aromatic hydrocarbons that are within Category C contaminated soil concentration range, as defined by IWRG621.

Introduction

This report outlines the works undertaken of the soil disposal categorisation investigation for soil located beneath the Carlisle Street supermarkets car parks.

Site Features

The site is existing public car parks. The car parks are located on Albert Street (i.e. Woolworths car park) and Camden/Nelson Streets (i.e. Coles car park), Balaclava. The site is shown on the site location in Appendix A. The Coles car park comprises numerous certificates of title individual land owners. This investigation has been undertaken on council owned property only. A plan has been provided in Appendix A which shows council owned land.

The site comprises asphalt and concrete surfaces, concrete edging and existing garden beds with medium sized, established trees.

Soil Sampling and Testing

On 6 May 2015, ten boreholes (BH1-BH10) were drilled on the site via hand sampling equipment. Fill of the site generally comprised crushed rock beneath the asphalt surface; dark brown and dark grey silty sand that contained minor charcoal; and red sand was observed beneath the Woolworths car park within one borehole (BH2) that contained metal, glass and ceramic fragments. Disturbed natural material beneath the site comprised grey, fine to medium grained sand and natural material was observed to comprise light grey silt and grey, brown and occasionally orange silty clay.

A plan showing the borehole locations is presented in Appendix A and logs of each borehole are presented in Appendix B. The boreholes were spaced on a systematic grid across each parcel of council land.

No Coode Island Silt or material potentially containing asbestos was encountered during sampling.

Individual samples were selected for chemical testing based on field observations. Samples were tested for a comprehensive screen of analytes as listed in IWRG621, and common potential contaminants encountered in Balaclava: heavy metals, and polycyclic aromatic hydrocarbons (PAH). The following chemical testing program was undertaken on selected individual samples:

Soil Sample	Chemical Testing
BH1-0.2, BH2-0.6, BH3-0.3, BH3-0.5, BH5-0.4, BH6-0.2, BH7-0.15, BH10-0.15, BH10-0.5	IWRG621 Screen#
BH1-0.4, BH2-0.2, BH2-0.3, BH2-0.4, BH3-0.4, BH4-0.3, BH4-0.4, BH5-0.3, BH5-0.6, BH5-0.7, BH6-0.3, BH7-0.2, BH7-0.4, BH7-0.65, BH8-0.3, BH8-0.5, BH9-0.15, BH9-0.25, BH9-0.5, BH10-0.3	Heavy metals*, PAH

IWRG621 Screen: Heavy metals*, total cyanide, fluoride, total petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylenes, polycyclic aromatic hydrocarbons, phenols, organochlorine pesticides, polychlorinated biphenyls, chlorinated hydrocarbons

*Heavy metals: Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Tin and Zinc

Soil chemical testing was undertaken by Australian Laboratory Services Pty Ltd, a National Association of Testing Authority accredited testing laboratory. A copy of the certificates of analysis from the testing laboratory is presented in Appendix C.

Testing Results

The results of chemical testing have been compared to soil categorisation thresholds listed in IWRG621. The majority of results for analytes tested are below the upper limits of Fill Material as defined by IWRG621. However, the following results which exceed Fill Material upper limits are:

Chemical	Range (mg/kg)	Locations Exceeding EPA Fill Material Upper Limits (Category C)	Locations Exceeding EPA Category C Upper Limits (Category B)	Locations Exceeding EPA Category B Upper Limits (Category A)
Arsenic	<5-49	BH2-0.3, BH9-0.5, BH10-0.3	None	None
Lead	<5-3,840	BH1-0.2, BH1-0.4, BH2-0.3, BH9-0.15,	BH2-0.3	
Tin	<5-2,700	BH2-0.3	BH2-0.3	
Zinc	8-592	BH1-0.2, BH7-0.2, BH9-0.15	None	None
Benzo(a)pyrene (BaP)	<0.5-5.4	BH1-0.2, BH2-0.2, BH2-0.3, BH5-0.3, BH9-0.15	BH5-0.3	None
Total PAH	<0.5-68.3	BH1-0.2, BH2-0.2, BH9-0.15	None	None

Conclusions

Elevated concentrations of heavy metals and PAHs were reported in soil samples collected from soil beneath the Carlisle Street supermarket car parks. Concentrations of arsenic and zinc exceeded the upper limits of Fill Material as defined by IWRG621 and lead, tin and BaP exceeded the upper limits of Category C Contaminated Soil.

Concentrations of lead and tin that are within Category B Contaminated Soil were reported in the fill sample of borehole BH2. Red sand fill containing metal, glass and ceramic fragments were present in this borehole and are considered to be localised to this location. As such the red sand fill and elevated heavy metal concentrations are not considered to be representative of overall conditions of the site.

One BaP concentration reported for fill of borehole BH5 exceeded the upper limit of Category C contaminated soil of 5 mg/kg as defined by IWRG621. Given the reported concentration of 5.4 mg/kg is only slightly exceeds and none of the other reported concentrations of BaP for fill samples tested exceed the upper limit of Category C contaminated soil, the reported BaP concentration for sample BH5-0.3 is not considered to be representative of overall conditions of the site.

Based on the chemical testing results and observations made during sampling, fill of the site is likely to be categorised as **Category C Contaminated Soil** as defined by IWRG621.

No concentrations reported for samples collected from natural material exceeded the upper limits

of Fill Material as defined by IWRG621. As such natural material, should it be proposed to be excavated and disposed offsite, is likely to be categorised as **Fill Material** defined by IWRG621.

Recommendations

If soil is proposed to be disposed offsite it must be tested in accordance with EPA Victoria guidelines including Australian Standard Leachability Procedure testing

Any contaminated soil that is excavated and disposed offsite must be transported and disposed in accordance with EPA Victoria guidelines.

During soil handling appropriate dust suppression measures such as wetting with water spray, should be implemented. If stockpiled soil will be left unattended for an extended period of time (i.e. overnight) and unable to be kept moist then soil will need to be isolated and covered with plastic sheeting.

If handling of soil produces dust or conducted during dry and windy conditions then workers should use appropriate personal protective equipment such as dust masks or respirators, gloves, safety glasses and long sleeves and trousers. Handling of soil should be suspended if excessive windy conditions are experienced. Workers should be undertaking a high level of cleanliness and hygiene when working with any excavated soil, particularly prior to eating and drinking.

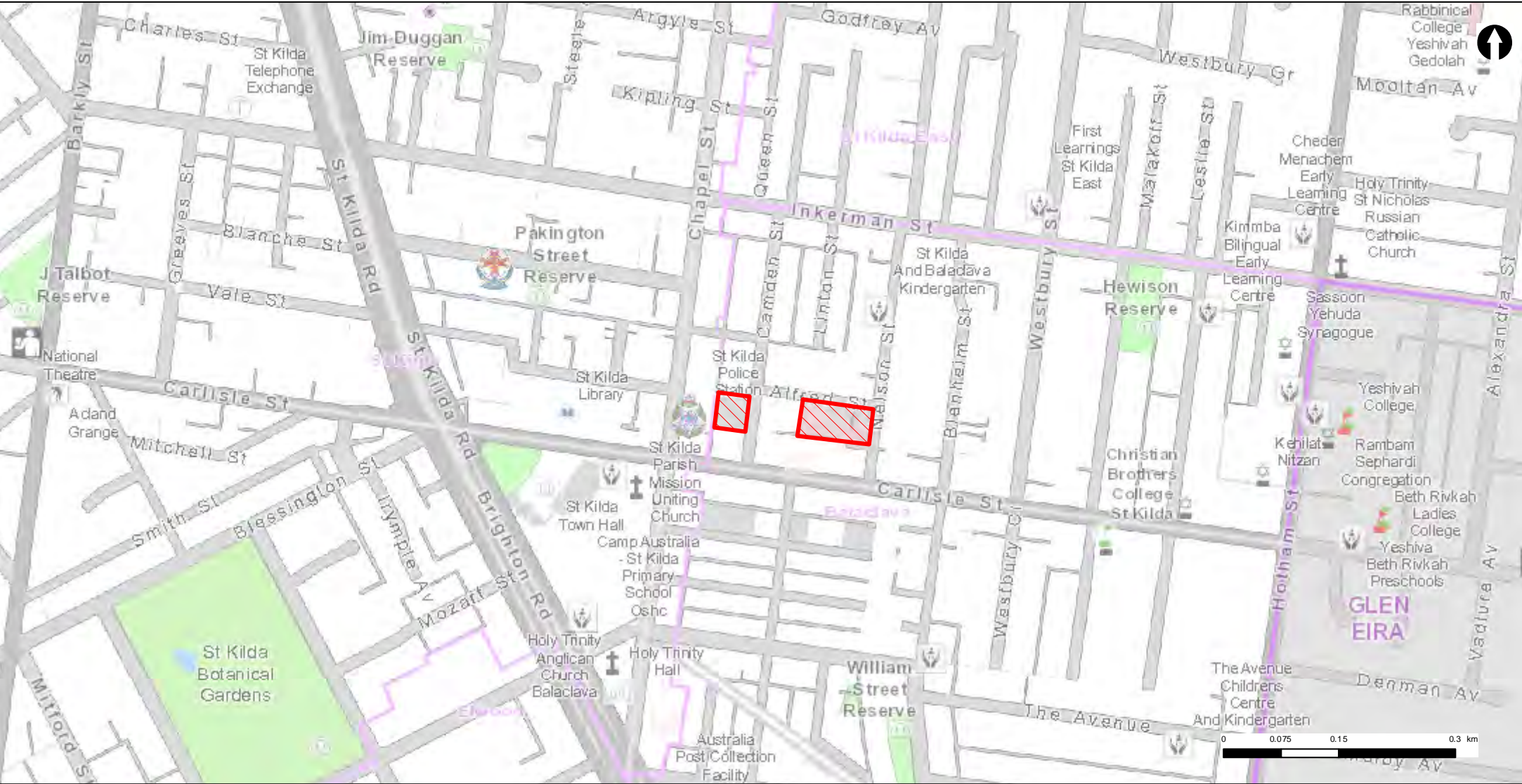
References:

Environment Protection Authority Victoria, 2009. Industrial Waste Resource Guideline 621, Soil Hazard Categorisation and Management

Environment Protection Authority Victoria, 2009. Industrial Waste Resource Guideline 702, Soil Sampling

APPENDIX A - FIGURES

Carlisle Street Supermarket Car Parks - Site Location



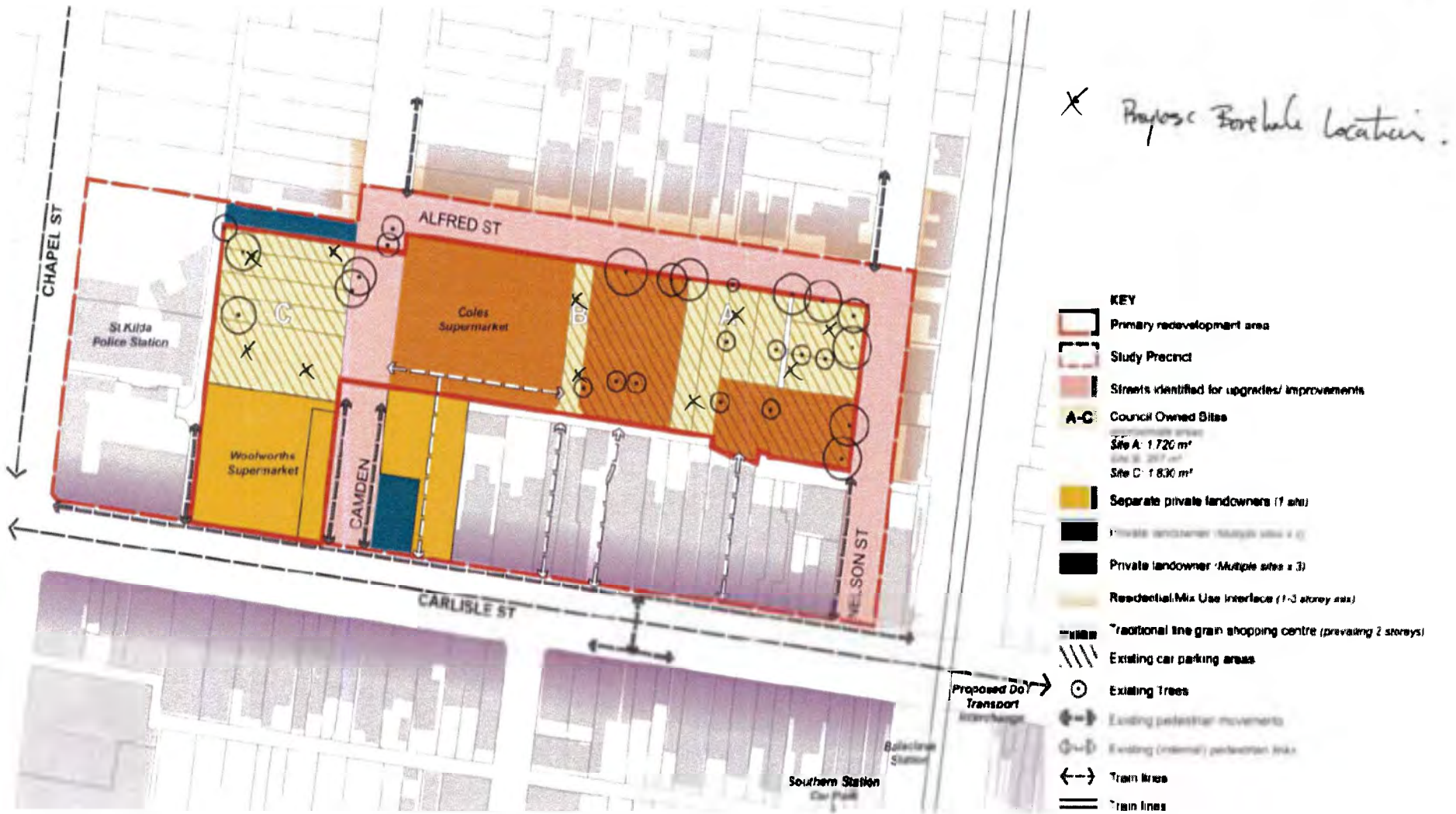
Scale 1:6,875 at A4

User:

Date: 25/06/2015

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Attachment 1 – Study Precinct, Subject Site and Ownership Pattern



Carlisle Street Supermarket Car Parks - Borehole Locations



Scale 1:1,803 at A4

User:

Date: 25/06/2015

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APPENDIX B – BOREHOLE LOGS



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Woolworths Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL Silty SAND, dark brown to dark grey, contains minor charcoal, moist, no odour	BH1-0.2 0.2-0.3m
0.4	becoming brown with depth, contains crushed ROCK	
0.5	DISTURBED SAND, grey, medium grained, moist, no odour NATURAL grades to Sandy CLAY	BH1-0.4 0.4-0.45m
0.6	NATURAL Silty CLAY, grey/brown, firm, low plasticity, slightly moist, no odour	
0.7	Refusal - tree root	
0.8		
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Woolworths Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND, grey, fine grained, slightly moist, no odour	BH2-0.2 0.2-0.3m
0.4	FILL SAND, red, contains ceramic, metal and glass fragments, fine grained, dry, no odour	BH2-0.3 0.3-0.4m
0.5	DISTURBED Silty SAND, grey, medium grained, dry, no odour NATURAL becoming clayey with depth, grey/brown	BH2-0.4 0.4-0.5m
0.6	NATURAL SILT, light grey, dry, no odour	
0.7	NATURAL Silty CLAY, grey/brown, stiff, medium plasticity, slightly moist, no odour	BH2-0.6 0.6-0.7m
0.8	Target depth	
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Woolworths Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND and crushed ROCK, brown and grey, wet (coring), no odour	BH3-0.3 0.3-0.4m
0.4	NATURAL SILT, light grey, dry, no odour	BH3-0.4 0.4-0.5m
0.5	NATURAL Silty CLAY, grey/brown/orange, stiff, medium plasticity, slightly moist, no odour	BH3-0.5 0.5-0.6m
0.6		
0.7	Target depth	
0.8		
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Woolworths Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND and crushed ROCK, brown and grey, wet (coring), no odour	BH4-0.3 0.3-0.4m
0.4	NATURAL Silty CLAY, grey/brown/orange, stiff, medium plasticity, slightly moist, no odour	BH4-0.4 0.4-0.5m
0.5		
0.6		
0.7	Target depth	
0.8		
0.9		



Borehole Log

Borehole No: BH5

Sheet No: 1 of 1

File No: CSCP

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND and SILT, brown, wet (coring), no odour	BH5-0.3 0.3-0.4m
0.4	DISTURBED SILT, light grey, dry, no odour NATURAL	BH5-0.4 0.4-0.5m
0.5		
0.6		BH5-0.6 0.6-0.7m
0.7	NATURAL Silty CLAY, grey/brown/orange, stiff, medium plasticity, slightly moist, no odour	BH5-0.7 0.7-0.8m
0.8	Target depth	
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.4
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND and crushed ROCK, brown and grey, wet (coring), no odour	BH6-0.2 0.2-0.3m
0.4	DISTURBED SILT, light grey, dry, no odour NATURAL	BH6-0.3 0.3-0.4m
0.5	Refusal	
0.6		
0.7		
0.8		
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.75
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.2	FILL SAND and crushed ROCK, brown and grey, wet (coring), no odour	BH7-0.15 0.15-0.2m
0.3	FILL SAND brown, contains crushed ROCK, dry, no odour	BH7-0.2 0.2-0.3m
0.4	DISTURBED SILT, light grey, dry, no odour NATURAL	BH7-0.4 0.4-0.5m
0.5		
0.6		
0.7	NATURAL Silty CLAY, grey/brown/orange, stiff, medium plasticity, slightly moist, no odour	BH7-0.65 0.65-0.75m
0.8	Target depth	
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL ASPHALT	
0.2	FILL Crushed ROCK, grey, angular, wet (coring), no odour	
0.3	FILL SAND, light grey, fine grained, wet (coring), no odour	BH8-0.3 0.3-0.4m
0.4		
0.5	NATURAL Silty CLAY, brown/orange, contain roots, soft, medium plasticity, wet, no odour	BH8-0.5 0.5-0.6m
0.6	Target depth	
0.7		
0.8		
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL CONCRETE	
0.2	FILL SAND, white, medium grained, contains roots, wet (coring), no odour	BH9-0.15 0.15-0.25m
0.3	FILL SAND, light grey, very fine grained, dry, no odour	BH9-0.2 0.25-0.35m
0.4		
0.5	NATURAL Silty CLAY, brown/orange, contain roots, firm, medium plasticity, slightly moist, no odour	BH9-0.5 0.5-0.6m
0.6	Target depth	
0.7		
0.8		
0.9		



Borehole Log

Address	St Kilda Supermarket Precinct	Logged by:	DP
Project:	Preliminary Contamination Assessment		
Location:	Coles Car Park	Date:	6/05/2015

Driller:	-	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	FILL CONCRETE	
0.2	FILL SAND and ROCK, grey to light grey, medium grained, wet, no odour	BH10-0.15 0.15-0.25m
0.3		
0.4	NATURAL Sandy CLAY, grey/brown/orange, stiff, medium plasticity, slightly moist, no odour	BH10-0.5 0.5-0.6m
0.5		
0.6		BH10-0.5 0.5-0.6m
	Target depth	
0.7		
0.8		
0.9		

APPENDIX C - CERTIFICATE OF ANALYSIS

CERTIFICATE OF ANALYSIS

Work Order	: EM1504725	Page	: 1 of 42
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Site	: CARLISLE ST, CARPARKS	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



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

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**
- **EP066-EM/075-EM: Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
		Melbourne Organics
Xing Lin	Senior Organic Chemist	Melbourne Organics



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	7.8	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	20.3	15.6	17.6	14.0	15.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	11	8	12	16
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	7	8	8	<5	9
Lead	7439-92-1	5	mg/kg	32	18	8	10	27
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	21	18	12	9	19
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	10	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	11	35	8	8	39
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	180	110	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	1.2	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.04	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.04	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.04	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.04	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.04	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.07	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.04	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.04	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.04	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.04	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.04	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.04	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.04	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.04	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.04	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.04	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.04	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.04	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	96.6	90.3	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.1	93.8	----	----	----
Toluene-D8	2037-26-5	0.1	%	92.8	94.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	94.2	96.8	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	96.1	95.7	85.4
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	97.5	98.1	94.3
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	76.3	77.5	64.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	106	104	108
Anthracene-d10	1719-06-8	0.1	%	----	----	123	117	108
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	105	102	114
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	72.2	57.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.8	59.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	102	74.9	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	67.4	56.2	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	57.6	52.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	83.5	74.5	----	----	----
Anthracene-d10	1719-06-8	0.1	%	104	103	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	115	108	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	---	0.1	pH Unit	---	---	7.6	---	---
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	---	1.0	%	16.7	17.9	22.0	---	---
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	33	49	8	---	---
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	---	---
Copper	7440-50-8	5	mg/kg	7	5	8	---	---
Lead	7439-92-1	5	mg/kg	13	14	9	---	---
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	---	---
Nickel	7440-02-0	2	mg/kg	14	11	16	---	---
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	---	---
Silver	7440-22-4	2	mg/kg	<2	<2	<2	---	---
Tin	7440-31-5	5	mg/kg	<5	<5	<5	---	---
Zinc	7440-66-6	5	mg/kg	6	<5	9	---	---
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	---	---
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	---	---	<1	---	---
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	---	---	140	---	---
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	---	0.1	mg/kg	---	---	<0.1	---	---
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	---	---	<0.2	---	---
Toluene	108-88-3	0.5	mg/kg	---	---	<0.5	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	---	---	<0.5	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	---	---	<0.5	---	---
Styrene	100-42-5	0.5	mg/kg	---	---	<0.5	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	---	---	<0.5	---	---
^ Sum of monocyclic aromatic hydrocarbons	---	0.2	mg/kg	---	---	<0.2	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	---	---	<0.5	---	---
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	---	---	<1	---	---
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	---	---	<0.02	---	---
1.1-Dichloroethene	75-35-4	0.01	mg/kg	---	---	<0.01	---	---
Methylene chloride	75-09-2	0.4	mg/kg	---	---	<0.4	---	---
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	---	---	<0.02	---	---
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	---	---	<0.01	---	---
Chloroform	67-66-3	0.02	mg/kg	---	---	<0.02	---	---
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	---	---	<0.01	---	---
Carbon Tetrachloride	56-23-5	0.01	mg/kg	---	---	<0.01	---	---
1.2-Dichloroethane	107-06-2	0.02	mg/kg	---	---	<0.02	---	---
Trichloroethene	79-01-6	0.02	mg/kg	---	---	<0.02	---	---
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	---	---	<0.04	---	---
Tetrachloroethene	127-18-4	0.02	mg/kg	---	---	<0.02	---	---
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	---	---	<0.01	---	---
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	---	---	<0.02	---	---
Hexachlorobutadiene	87-68-3	0.02	mg/kg	---	---	<0.02	---	---
Chlorobenzene	108-90-7	0.02	mg/kg	---	---	<0.02	---	---
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	---	---	<0.02	---	---
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	---	---	<0.02	---	---
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	---	---	<0.01	---	---
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	---	---	<0.01	---	---
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	---	---	<0.01	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	---	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	---	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	---	---	---
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	---	---	---
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	---	---	---
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	---	---	<0.04	---	---
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	---	---	<0.04	---	---
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	---	---	<0.04	---	---
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	---	---	<0.04	---	---
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	---	---	<0.05	---	---
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	---	---	<0.05	---	---
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	---	---	<0.04	---	---
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	---	---	<0.07	---	---
Pentachlorophenol	87-86-5	0.2	mg/kg	---	---	<0.2	---	---
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	---	---	<0.04	---	---
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	---	---	<1	---	---
2-Methylphenol	95-48-7	1	mg/kg	---	---	<1	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	---	---	<1	---	---
2-Nitrophenol	88-75-5	1	mg/kg	---	---	<1	---	---
2,4-Dimethylphenol	105-67-9	1	mg/kg	---	---	<1	---	---
2,4-Dinitrophenol	51-28-5	5	mg/kg	---	---	<5	---	---
4-Nitrophenol	100-02-7	5	mg/kg	---	---	<5	---	---
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	---	---	<5	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	---	---	<5	---	---
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	---	---	<5	---	---
^ Sum of Phenols (non-halogenated)	---	1	mg/kg	---	---	<1	---	---
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	---	---	<0.5	---	---
Acenaphthene	83-32-9	0.5	mg/kg	---	---	<0.5	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	---	---	<0.5	---	---
Fluorene	86-73-7	0.5	mg/kg	---	---	<0.5	---	---
Phenanthrene	85-01-8	0.5	mg/kg	---	---	<0.5	---	---
Anthracene	120-12-7	0.5	mg/kg	---	---	<0.5	---	---
Fluoranthene	206-44-0	0.5	mg/kg	---	---	<0.5	---	---
Pyrene	129-00-0	0.5	mg/kg	---	---	<0.5	---	---
Benzo(a)anthracene	56-55-3	0.5	mg/kg	---	---	<0.5	---	---
Chrysene	218-01-9	0.5	mg/kg	---	---	<0.5	---	---
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	---	---	<0.5	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	---	---	<0.5	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	---	---	<0.5	---	---
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	---	---	<0.5	---	---
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	---	---	<0.5	---	---
^ Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	---	---	<0.5	---	---
^ Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	---	---	<0.5	---	---
^ Benzo(a)pyrene TEQ (half LOR)	---	0.5	mg/kg	---	---	0.6	---	---
^ Benzo(a)pyrene TEQ (LOR)	---	0.5	mg/kg	---	---	1.2	---	---
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	---	---	<0.04	---	---
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	---	---	<0.04	---	---
beta-BHC	319-85-7	0.03	mg/kg	---	---	<0.04	---	---
gamma-BHC	58-89-9	0.03	mg/kg	---	---	<0.04	---	---
delta-BHC	319-86-8	0.03	mg/kg	---	---	<0.04	---	---
Heptachlor	76-44-8	0.03	mg/kg	---	---	<0.04	---	---
Aldrin	309-00-2	0.03	mg/kg	---	---	<0.04	---	---
Heptachlor epoxide	1024-57-3	0.03	mg/kg	---	---	<0.04	---	---
cis-Chlordane	5103-71-9	0.03	mg/kg	---	---	<0.04	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	---	---	<0.04	---	---
Endosulfan 1	959-98-8	0.03	mg/kg	---	---	<0.04	---	---
4,4'-DDE	72-55-9	0.05	mg/kg	---	---	<0.05	---	---
Dieldrin	60-57-1	0.03	mg/kg	---	---	<0.04	---	---
Endrin aldehyde	7421-93-4	0.03	mg/kg	---	---	<0.04	---	---
Endrin	72-20-8	0.03	mg/kg	---	---	<0.04	---	---
Endosulfan 2	33213-65-9	0.03	mg/kg	---	---	<0.04	---	---
4,4'-DDD	72-54-8	0.05	mg/kg	---	---	<0.05	---	---
Endosulfan sulfate	1031-07-8	0.03	mg/kg	---	---	<0.04	---	---
4,4'-DDT	50-29-3	0.05	mg/kg	---	---	<0.05	---	---
Methoxychlor	72-43-5	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of organochlorine pesticides	---	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of DDD + DDE + DDT	---	0.05	mg/kg	---	---	<0.05	---	---
^ Chlordane	57-74-9	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of other organochlorine pesticides	---	0.03	mg/kg	---	---	<0.04	---	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	10	mg/kg	---	---	<10	---	---
C10 - C14 Fraction	---	50	mg/kg	---	---	<50	---	---
C6 - C10 Fraction	C6_C10	10	mg/kg	---	---	<10	---	---
C15 - C28 Fraction	---	100	mg/kg	---	---	<100	---	---
C29 - C36 Fraction	---	100	mg/kg	---	---	<100	---	---
^ C10 - C36 Fraction (sum)	---	50	mg/kg	---	---	<50	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	---	---	<50	---	---
>C16 - C34 Fraction	---	100	mg/kg	---	---	<100	---	---
>C34 - C40 Fraction	---	100	mg/kg	---	---	<100	---	---
^ >C10 - C40 Fraction (sum)	---	50	mg/kg	---	---	<50	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	50	mg/kg	---	---	<50	---	---
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	---	---	<10	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	---	---	88.5	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	---	---	96.8	---	---
Toluene-D8	2037-26-5	0.1	%	---	---	95.9	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	---	---	88.9	---	---
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	86.3	88.6	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	95.4	98.6	---	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	45.0	44.0	---	---	---
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	110	112	---	---	---
Anthracene-d10	1719-06-8	0.1	%	120	116	---	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	115	118	---	---	---
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	---	---	72.6	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	72.5	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	---	---	64.3	---	---
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	---	---	70.3	---	---
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	---	---	67.0	---	---
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	89.7	---	---
Anthracene-d10	1719-06-8	0.1	%	---	---	108	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	109	---	---



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.0	10.4	6.8	4.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	11	<5	34	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	47	<5	16	51	5
Lead	7439-92-1	5	mg/kg	720	355	154	3840	40
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	15	6	11	29	6
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	15	<5	14	2700	34
Zinc	7440-66-6	5	mg/kg	592	133	203	86	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.4	<0.1	0.7	1.7	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	50	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	1.4	0.8	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	4.5	2.8	<0.5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	4.4	2.7	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	2.3	1.4	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	2.0	1.2	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	3.3	1.6	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	1.1	0.7	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	2.6	1.3	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	1.6	0.8	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	1.8	0.9	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	25.0	14.2	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	3.5	1.8	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	3.7	2.0	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	4.0	2.3	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.18	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.18	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.18	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.18	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.18	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.18	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.18	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.37	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.18	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<15	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<15	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<15	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<15	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<14	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	2.7	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	0.9	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	7.6	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	7.4	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	4.0	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	3.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	8.1	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	4.4	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	2.2	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	2.4	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	43.2	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	5.9	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	6.1	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	6.4	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.18	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.18	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.18	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.18	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.18	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.18	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.18	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.18	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.18	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.18	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.18	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.18	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.18	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.18	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.18	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.18	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.18	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	110	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	110	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	85.3	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	84.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	78.6	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	93.2	95.1	94.9	97.4
2-Chlorophenol-D4	93951-73-6	0.1	%	----	95.4	98.0	98.4	98.5
2,4,6-Tribromophenol	118-79-6	0.1	%	----	79.2	82.0	74.6	81.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	106	110	106	110
Anthracene-d10	1719-06-8	0.1	%	----	120	109	112	116
4-Terphenyl-d14	1718-51-0	0.1	%	----	105	97.3	101	103
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	Not Determined	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	Not Determined	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	Not Determined	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	Not Determined	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	Not Determined	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	Not Determined	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	Not Determined	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	Not Determined	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.1	----	----	8.1	8.2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	8.9	10.1	6.3	13.7	5.0
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	45	31	28	34	28
Lead	7439-92-1	5	mg/kg	37	<5	165	<5	<5
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	101	107	47	96	87
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	6	<5	7	<5	<5
Zinc	7440-66-6	5	mg/kg	63	46	161	41	39
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	<1	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	140	----	----	150	120
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	----	----	<0.7	<0.7
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	<0.2	<0.2



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	----	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	<0.4	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	1.8	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	0.8	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	9.0	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	2.2	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	12.2	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	11.0	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	5.4	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	4.4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	6.7	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	2.2	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	5.4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	3.0	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	0.8	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	3.4	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	68.3	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	8.0	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	8.0	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	8.0	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.36	----	----	<0.34	<0.36
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<14	----	----	<14	<14
4-Nitrophenol	100-02-7	5	mg/kg	<14	----	----	<14	<14
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<14	----	----	<14	<14



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<14	----	----	<14	<14
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<14	----	----	<14	<14
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
beta-BHC	319-85-7	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
gamma-BHC	58-89-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
delta-BHC	319-86-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Heptachlor	76-44-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Aldrin	309-00-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan 1	959-98-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDE	72-55-9	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Dieldrin	60-57-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endrin	72-20-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDD	72-54-8	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDT	50-29-3	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Methoxychlor	72-43-5	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
^ Chlordane	57-74-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	91.8	----	----	87.0	97.5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.3	----	----	92.9	97.8
Toluene-D8	2037-26-5	0.1	%	92.3	----	----	91.3	97.2
4-Bromofluorobenzene	460-00-4	0.1	%	94.5	----	----	84.4	94.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	89.2	94.4	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	90.8	96.0	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	72.4	79.5	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	102	103	----	----
Anthracene-d10	1719-06-8	0.1	%	----	115	101	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	97.3	92.4	----	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2-Chlorophenol-D4	93951-73-6	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2,4,6-Tribromophenol	118-79-6	0.1	%	Not Determined	----	----	Not Determined	Not Determined
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	Not Determined	----	----	Not Determined	Not Determined
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2-Fluorobiphenyl	321-60-8	0.1	%	Not Determined	----	----	Not Determined	Not Determined
Anthracene-d10	1719-06-8	0.1	%	Not Determined	----	----	Not Determined	Not Determined
4-Terphenyl-d14	1718-51-0	0.1	%	Not Determined	----	----	Not Determined	Not Determined



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	----	----	8.9
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	2.7	10.2	10.5	1.8	16.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	32	<5	32	<5	15
Lead	7439-92-1	5	mg/kg	256	8	581	<5	20
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	55	3	12	<2	29
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	10	<5	12	<5	<5
Zinc	7440-66-6	5	mg/kg	281	10	349	<5	57
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.9	<0.1	0.7	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	----	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	----	----	<40
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	----	----	<0.2



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	----	----	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	----	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	----	----	----	----	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	----	----	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	----	----	<0.01
Chloroform	67-66-3	0.02	mg/kg	----	----	----	----	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	----	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	----	----	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	----	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	----	----	----	----	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	----	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	----	----	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	----	----	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	----	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	----	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	----	----	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	----	----	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	----	----	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	----	<0.01
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	3.4	<0.5	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	3.4	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	2.6	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	1.1	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	18.7	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	2.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	2.7	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	3.0	1.2	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	----	----	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	----	----	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	----	----	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	----	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	----	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	----	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	----	----	<0.07
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg	----	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	----	----	----	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	----	----	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	----	----	----	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	----	----	----	<5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	----	----	----	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	----	----	<0.03



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	105



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	----	103
Toluene-D8	2037-26-5	0.1	%	----	----	----	----	98.8
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	----	97.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	97.9	78.6	84.1	89.0	----
2-Chlorophenol-D4	93951-73-6	0.1	%	99.7	84.9	93.2	93.5	----
2,4,6-Tribromophenol	118-79-6	0.1	%	79.6	59.2	64.2	60.8	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	105	94.8	105	108	----
Anthracene-d10	1719-06-8	0.1	%	113	86.7	97.3	98.8	----
4-Terphenyl-d14	1718-51-0	0.1	%	101	105	106	108	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	----	----	82.0
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	----	82.8
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	----	74.5
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	----	----	82.0
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	----	----	76.3
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	----	102
Anthracene-d10	1719-06-8	0.1	%	----	----	----	----	108
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	----	113



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	7.2	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	11.6	3.5	3.4	11.0	1.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	15	<5	<5	15	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	7	6	13	6	6
Lead	7439-92-1	5	mg/kg	40	37	18	7	45
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	7	4	2	15	4
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	21	14	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	36	42	16	12	93
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	3	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	50	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	----	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	1.2	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	<0.04	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	<0.04	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	<0.04	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.04	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.04	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.07	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.04	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	----	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.04	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.04	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.04	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.04	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.04	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.04	----	----	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.04	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.04	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.04	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.04	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	<0.04	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.04	----	----	----
Endrin	72-20-8	0.03	mg/kg	----	<0.04	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.04	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	85.5	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	97.0	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	94.3	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	96.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.0	----	93.6	95.2	99.6
2-Chlorophenol-D4	93951-73-6	0.1	%	94.3	----	96.5	97.4	102
2,4,6-Tribromophenol	118-79-6	0.1	%	78.8	----	76.0	75.7	80.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	107	----	102	98.4	110
Anthracene-d10	1719-06-8	0.1	%	115	----	110	115	118
4-Terphenyl-d14	1718-51-0	0.1	%	104	----	98.0	99.7	104
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	46.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	54.5	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	69.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	50.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	49.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	74.2	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	96.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	103	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

BH8_0.5

Client sampling date / time

06-MAY-2015 15:00

Compound	CAS Number	LOR	Unit	EM1504725-023	---	---	---	---
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EA055: Moisture Content

Moisture Content (dried @ 103°C)	---	1.0	%	21.6	---	---	---	---
----------------------------------	-----	-----	---	------	-----	-----	-----	-----

EG005T: Total Metals by ICP-AES

Arsenic	7440-38-2	5	mg/kg	13	---	---	---	---
Cadmium	7440-43-9	1	mg/kg	<1	---	---	---	---
Copper	7440-50-8	5	mg/kg	9	---	---	---	---
Lead	7439-92-1	5	mg/kg	14	---	---	---	---
Molybdenum	7439-98-7	2	mg/kg	<2	---	---	---	---
Nickel	7440-02-0	2	mg/kg	14	---	---	---	---
Selenium	7782-49-2	5	mg/kg	<5	---	---	---	---
Silver	7440-22-4	2	mg/kg	<2	---	---	---	---
Tin	7440-31-5	5	mg/kg	<5	---	---	---	---
Zinc	7440-66-6	5	mg/kg	47	---	---	---	---

EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.1	mg/kg	<0.1	---	---	---	---
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EG048: Hexavalent Chromium (Alkaline Digest)

Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	---	---	---	---
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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	---	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	---	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	---	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	---	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	---	---	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	---	---	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	---	---	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	---	---	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	---	---	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	---	---	---	---
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	---	---	---	---
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	---	---	---	---



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

BH8_0.5

Client sampling date / time

06-MAY-2015 15:00

Compound	CAS Number	LOR	Unit	EM1504725-023	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	79.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	87.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	52.8	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	100	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	103	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	107	----	----	----	----



Surrogate Control Limits

Sub-Matrix: CLAY		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2,4,6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: SAND		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125



Sub-Matrix: SAND		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)T: PAH Surrogates - Continued			
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2.4.6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: SILT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2.4.6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

QUALITY CONTROL REPORT

Work Order	: EM1504725	Page	: 1 of 23
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Order number	: ----	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



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.

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



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
		Melbourne Organics
Xing Lin	Senior Organic Chemist	Melbourne Organics



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 (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 3925604)									
EM1504667-004	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.2	5.1	1.9	0% - 20%
EM1504725-007	BH3_0.3	EA001: pH (CaCl2)	----	0.1	pH Unit	8.1	8.2	1.2	0% - 20%
EA055: Moisture Content (QC Lot: 3925589)									
EM1504725-001	BH1_0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.8	0.0	0% - 50%
EM1504725-010	BH4_0.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	10.1	11.2	10.3	0% - 50%
EA055: Moisture Content (QC Lot: 3925590)									
EM1504725-020	BH7_0.4	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.4	<1.0	29.9	No Limit
EM1504726-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.8	6.6	11.9	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 3926776)									
EM1504675-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	5	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	12	50.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	96	84	13.3	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	6	<5	20.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	114	98	15.1	0% - 20%
EM1504725-001	BH1_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	18	17.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	50	6.9	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	720	693	3.8	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	15	14	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	592	577	2.6	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3926778)									
EM1504725-010	BH4_0.3	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	107	117	9.2	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit



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 (%)
EG005T: Total Metals by ICP-AES (QC Lot: 3926778) - continued									
EM1504725-010	BH4_0.3	EG005T: Copper	7440-50-8	5	mg/kg	31	33	6.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	52	12.5	0% - 50%
EM1504725-019	BH7_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	55	53	4.0	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	10	51.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	32	29	9.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	256	215	17.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	10	8	26.2	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	281	307	8.9	0% - 20%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3926777)									
EM1504675-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1504725-001	BH1_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.4	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3926779)									
EM1504725-010	BH4_0.3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1504725-019	BH7_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.9	0.3	97.8	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3926443)									
EM1504725-001	BH1_0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504725-010	BH4_0.3	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3926444)									
EM1504725-021	BH7_0.65	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504731-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 3928236)									
EM1504667-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM1504725-007	BH3_0.3	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 3925534)									
EM1504667-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	90	0.0	No Limit
EM1504725-009	BH3_0.5	EK040T: Fluoride	16984-48-8	40	mg/kg	110	110	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3925577)									
EM1504667-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	<0.7	0.0	No Limit
EM1504725-013	BH5_0.4	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3925533) - continued									
EM1504725-001	BH1_0.2	EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit
		EM1504731-014	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01
EP074-UT: cis-1.2-Dichloroethene	156-59-2			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: 1.1.1-Trichloroethane	71-55-6			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: Carbon Tetrachloride	56-23-5			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6			0.01	mg/kg	<0.01	<0.01	0.0	No Limit



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 (%)	
EP074I: Volatile Halogenated Compounds (QC Lot: 3925533) - continued										
EM1504731-014	Anonymous	EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit	
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,1,1,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit	
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925549)										
EM1504725-002	BH1_0.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EM1504725-017	BH6_0.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



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 (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925549) - continued										
EM1504725-017	BH6_0.3	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925552)										
EM1504725-021	BH7_0.65	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EM1504726-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925552) - continued									
EM1504726-004	Anonymous	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.37	<0.37	0.0	No Limit
EM1504725-013	BH5_0.4	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.07	<0.07	0.0	No Limit
EM1504667-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<15	<15	0.0	No Limit
		EM1504725-013	BH5_0.4	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1
EP075-EM: 2-Methylphenol	95-48-7			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 3- & 4-Methylphenol	1319-77-3			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 2-Nitrophenol	88-75-5			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 2,4-Dimethylphenol	105-67-9			1	mg/kg	<1	<1	0.0	No Limit



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 (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 3925575) - continued									
EM1504725-013	BH5_0.4	EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504725-013	BH5_0.4	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.19	<0.19	0.0	No Limit



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 (%)
EP075I: Organochlorine Pesticides (QC Lot: 3925575) - continued									
EM1504667-004	Anonymous	EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.19	<0.19	0.0	No Limit		
EM1504725-013	BH5_0.4	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925533)									

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 Work Order : EM1504725
 Client : CITY OF PORT PHILLIP
 Project : CONTAMINATION ASSESSMENT



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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925533) - continued									
EM1504725-001	BH1_0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925548)									
EM1504725-001	BH1_0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925553)									
EM1504725-027	BH10_0.15	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925548)									
EM1504725-001	BH1_0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	110	140	23.2	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925553)									
EM1504725-027	BH10_0.15	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3926776)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.4	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	97.6	90	116	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	93.6	85	107	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	104	85	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	98.0	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.2	93	109	
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.10 mg/kg	97.1	80	108	
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	100	94	114	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.1	89	111	
EG005T: Total Metals by ICP-AES (QCLot: 3926778)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.2	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	93.2	90	116	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	95.0	85	107	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	108	85	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	94.1	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.4	93	109	
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.10 mg/kg	99.5	80	108	
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	110	94	114	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.5	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.7	85	103	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.5	85	103	
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443) - continued								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	91.5	80	120
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.4	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	103	82	106
EK040T: Fluoride Total (QCLot: 3925534)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	83.4	75	108
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	110	55	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	91.2	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	91.6	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.3	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	90.7	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.5	70	116
EP074H: Naphthalene (QCLot: 3925533)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	86.1	70	130
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	100	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	63	133
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	86.6	65	131
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	71.1	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	89.1	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.1	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.8	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	84.5	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.4	74	122



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074I: Volatile Halogenated Compounds (QCLot: 3925533) - continued									
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	65	123	
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.2	69	119	
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	71	125	
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.6	61	125	
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	100	70	130	
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.6	62	122	
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.9	65	123	
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	80.0	53	127	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925549)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	106	65	119	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	108	61	125	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	103	68	114	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	92.5	62	120	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	69	113	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	105	68	116	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	112	67	115	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	111	66	116	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	99.9	62	116	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	112	63	119	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	109	64	114	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	105	67	115	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	106	64	114	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	106	62	116	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	103	62	114	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	101	59	117	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	99.6	65	119	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	97.3	61	125	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	111	68	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS	Low	High		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552) - continued									
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	# 126	62	120	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	103	69	113	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	102	68	116	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	111	67	115	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	112	66	116	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	109	62	116	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	117	63	119	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	75.0	64	114	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	79.0	67	115	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	67.0	64	114	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	101	62	116	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	89.9	62	114	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	77.3	59	117	
EP075A: Phenolic Compounds (Halogenated) (QCLot: 3925575)									
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	0.5 mg/kg	76.1	27	125	
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	0.5 mg/kg	83.2	30	136	
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	0.5 mg/kg	80.6	35	121	
EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	0.5 mg/kg	98.6	43	125	
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	42	120	
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	42	124	
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	0.5 mg/kg	96.8	30	126	
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	1.0 mg/kg	93.7	44	124	
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	0.5 mg/kg	110	15	124	
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575)									
EP075-EM: Phenol	108-95-2	0.1	mg/kg	<1	0.5 mg/kg	77.7	26	121	
EP075-EM: 2-Methylphenol	95-48-7	0.1	mg/kg	<1	0.5 mg/kg	78.5	25	133	
EP075-EM: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<1	1 mg/kg	79.8	29	130	
EP075-EM: 2-Nitrophenol	88-75-5	0.1	mg/kg	<1	0.5 mg/kg	79.1	32	136	
EP075-EM: 2,4-Dimethylphenol	105-67-9	0.1	mg/kg	<1	0.5 mg/kg	78.1	10	142	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575) - continued									
EP075-EM: 2,4-Dinitrophenol	51-28-5	0.1	mg/kg	<5	3 mg/kg	88.2	23	125	
EP075-EM: 4-Nitrophenol	100-02-7	0.1	mg/kg	<5	3 mg/kg	113	43	133	
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	0.1	mg/kg	<5	3 mg/kg	111	12	125	
EP075-EM: Dinoseb	88-85-7	0.1	mg/kg	<5	3 mg/kg	114	35	123	
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	0.1	mg/kg	<5	2.5 mg/kg	113	10	132	
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)									
EP075-EM: Naphthalene	91-20-3	0.1	mg/kg	<0.5	0.5 mg/kg	81.6	38	120	
EP075-EM: Acenaphthene	83-32-9	0.1	mg/kg	<0.5	0.5 mg/kg	94.7	46	122	
EP075-EM: Acenaphthylene	208-96-8	0.1	mg/kg	<0.5	0.5 mg/kg	99.4	39	127	
EP075-EM: Fluorene	86-73-7	0.1	mg/kg	<0.5	0.5 mg/kg	104	51	125	
EP075-EM: Phenanthrene	85-01-8	0.1	mg/kg	<0.5	0.5 mg/kg	116	57	127	
EP075-EM: Anthracene	120-12-7	0.1	mg/kg	<0.5	0.5 mg/kg	116	55	127	
EP075-EM: Fluoranthene	206-44-0	0.1	mg/kg	<0.5	0.5 mg/kg	123	57	131	
EP075-EM: Pyrene	129-00-0	0.1	mg/kg	<0.5	0.5 mg/kg	123	57	131	
EP075-EM: Benz(a)anthracene	56-55-3	0.1	mg/kg	<0.5	0.5 mg/kg	123	56	132	
EP075-EM: Chrysene	218-01-9	0.1	mg/kg	<0.5	0.5 mg/kg	126	58	134	
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.1	mg/kg	<0.5	1.0 mg/kg	118	55	133	
EP075-EM: Benzo(a)pyrene	50-32-8	0.1	mg/kg	<0.5	0.5 mg/kg	118	51	135	
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.1	mg/kg	<0.5	0.5 mg/kg	105	55	137	
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.1	mg/kg	<0.5	0.5 mg/kg	106	54	136	
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.1	mg/kg	<0.5	0.5 mg/kg	102	55	137	
EP075I: Organochlorine Pesticides (QCLot: 3925575)									
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	0.5 mg/kg	114	54	130	
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	0.5 mg/kg	108	54	130	
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	0.5 mg/kg	120	54	134	
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	0.5 mg/kg	118	54	132	
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	0.5 mg/kg	120	55	131	
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	0.5 mg/kg	112	54	128	
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	0.5 mg/kg	117	54	128	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 3925575) - continued								
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	0.5 mg/kg	123	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	0.5 mg/kg	125	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	0.5 mg/kg	122	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	0.5 mg/kg	125	53	133
EP075-EM: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	126	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	0.5 mg/kg	124	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	0.5 mg/kg	43.5	16	178
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	0.5 mg/kg	123	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	0.5 mg/kg	126	56	138
EP075-EM: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	130	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	0.5 mg/kg	126	51	133
EP075-EM: 4.4'-DDT	50-29-3	0.05	mg/kg	<0.05	0.5 mg/kg	112	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	0.5 mg/kg	112	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	73.8	64	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925548)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	658 mg/kg	93.7	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3160 mg/kg	93.0	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1448 mg/kg	92.7	75	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925553)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	658 mg/kg	104	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3160 mg/kg	101	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1448 mg/kg	102	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925533)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	72.5	64	120
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548)								
EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	1051 mg/kg	90.6	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	4124 mg/kg	94.0	77	127



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548) - continued								
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	161 mg/kg	92.0	43	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925553)								
EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	1051 mg/kg	104	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	4124 mg/kg	103	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	161 mg/kg	80.5	43	123

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			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3926776)							
EM1504718-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	97.6	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	88.7	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.6	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	93.8	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.8	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	89.7	74	128
EG005T: Total Metals by ICP-AES (QCLot: 3926778)							
EM1504725-011	BH4_0.4	EG005T: Arsenic	7440-38-2	50 mg/kg	106	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	100	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	100	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	88.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	97.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)							
EM1504718-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	98.0	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)							
EM1504725-011	BH4_0.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.4	76	116



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
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)							
EM1504725-002	BH1_0.4	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	84.6	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)							
EM1504725-006	BH2_0.6	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.9	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)							
EM1504667-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	77	113
EK040T: Fluoride Total (QCLot: 3925534)							
EM1504667-010	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	89.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)							
EM1504725-001	BH1_0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	79.6	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	110	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	110	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	107	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	111	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	58	134
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925549)							
EM1504725-003	BH2_0.2	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	104	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	128	52	148
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552)							
EM1504725-022	BH8_0.3	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	# 119	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	138	52	148
EP075A: Phenolic Compounds (Halogenated) (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	75.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.5 mg/kg	90.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	25.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	74.0	31.5	134
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	66.5	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	86.4	46	138
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	108	26.5	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)							
EM1504725-006	BH2_0.6						



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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533) - continued							
EM1504725-006	BH2_0.6	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	66.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925548)							
EM1504725-006	BH2_0.6	EP071-EM: C10 - C14 Fraction	----	658 mg/kg	101	53	123
		EP071-EM: C15 - C28 Fraction	----	3160 mg/kg	99.1	70	124
		EP071-EM: C29 - C36 Fraction	----	1448 mg/kg	98.6	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925553)							
EM1504725-029	BH10_0.5	EP071-EM: C10 - C14 Fraction	----	658 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3160 mg/kg	97.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1448 mg/kg	97.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	64.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548)							
EM1504725-006	BH2_0.6	EP071-EM: >C10 - C16 Fraction	>C10_C16	1051 mg/kg	97.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	4124 mg/kg	100	67	121
		EP071-EM: >C34 - C40 Fraction	----	161 mg/kg	93.2	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925553)							
EM1504725-029	BH10_0.5	EP071-EM: >C10 - C16 Fraction	>C10_C16	1051 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	4124 mg/kg	99.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	161 mg/kg	71.4	44	126

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)										
EM1504725-006	BH2_0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	110	----	50	138	----	----
		EP074-UT: Toluene	108-88-3	2 mg/kg	110	----	56	134	----	----
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)										
EM1504725-006	BH2_0.6	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	107	----	26	141	----	----
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	111	----	50	134	----	----
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	----	58	134	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)										



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575) - continued										
EM1504667-026	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	74.0	----	31.5	134	----	----
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	66.5	----	13	129	----	----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)										
EM1504667-026	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	86.4	----	46	138	----	----
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	108	----	26.5	169	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)										
EM1504725-001	BH1_0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	79.6	----	36	152	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)										
EM1504725-002	BH1_0.4	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	84.6	----	58	114	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)										
EM1504725-006	BH2_0.6	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.9	----	58	114	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3926776)										
EM1504718-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.4	----	78	124	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.2	----	84	116	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	97.6	----	82	124	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	88.7	----	76	124	----	----
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.6	----	79	117	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	93.8	----	78	120	----	----
		EG005T: Selenium	7782-49-2	50 mg/kg	81.8	----	71	125	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	89.7	----	74	128	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)										
EM1504718-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	98.0	----	76	116	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3926778)										
EM1504725-011	BH4_0.4	EG005T: Arsenic	7440-38-2	50 mg/kg	106	----	78	124	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	----	84	116	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	100	----	82	124	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	95.4	----	76	124	----	----
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.7	----	79	117	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	78	120	----	----
		EG005T: Selenium	7782-49-2	50 mg/kg	88.3	----	71	125	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	97.0	----	74	128	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)										
EM1504725-011	BH4_0.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.4	----	76	116	----	----

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 Work Order : EM1504725
 Client : CITY OF PORT PHILLIP
 Project : CONTAMINATION ASSESSMENT



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)										
EM1504667-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	----	77	113	----	----



INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EM1504725	Page	: 1 of 13
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Order number	: ----	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	08-MAY-2015	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3,	06-MAY-2015	----	----	----	07-MAY-2015	20-MAY-2015	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	11-MAY-2015	02-NOV-2015	✓	12-MAY-2015	02-NOV-2015	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	11-MAY-2015	03-JUN-2015	✓	12-MAY-2015	03-JUN-2015	✓



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	
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	08-MAY-2015	03-JUN-2015	✓	08-MAY-2015	15-MAY-2015	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	11-MAY-2015	20-MAY-2015	✓	12-MAY-2015	25-MAY-2015	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	03-JUN-2015	✓	11-MAY-2015	03-JUN-2015	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15 BH2_0.6, BH3_0.5, BH6_0.2,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓	
Soil Glass Jar - Unpreserved (EP071-EM) BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	09-MAY-2015	17-JUN-2015	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5 BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓	
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5 BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓	
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5 BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5 BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓	



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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH1_0.4, BH2_0.3, BH3_0.4, BH4_0.4, BH5_0.6, BH6_0.3, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5,	BH2_0.2, BH2_0.4, BH4_0.3, BH5_0.3, BH5_0.7, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.3	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	11-MAY-2015	17-JUN-2015	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓



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	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	30	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
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 (SnCl ₂)(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 SnCl ₂ 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)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In-house, APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	Rayment and Higginson 4B1 (mod.), 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	(In-house) Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17A-EM	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	4742876-001	----	Fluorene	86-73-7	126 %	62-120%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1504725-022	BH8_0.3	Acenaphthene	83-32-9	119 %	67-117%	Recovery greater than upper data quality objective

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences



Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences



Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

SAMPLE RECEIPT NOTIFICATION (SRN)**Comprehensive Report**

Work Order	: EM1504725		
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	Page	: 1 of 3
Order number	: ----	Quote number	: EM2014CITPOR0026 (MEBQ/125/14)
C-O-C number	: CSCP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS		
Sampler	: DP		

Dates

Date Samples Received	: 06-MAY-2015	Issue Date	: 07-MAY-2015 13:38
Client Requested Due Date	: 13-MAY-2015	Scheduled Reporting Date	: 13-MAY-2015

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 18.9
No. of coolers/boxes	: 2	No. of samples received	: 29
Security Seal	: Intact.	No. of samples analysed	: 29

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- **Analytical work for this work order will be conducted at ALS Springvale.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG048G Total Hexavalent Chromium (Alkaline digestion) by	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - P-16 IWRG 621	SOIL - P-16/1 IWRG 621 METALS
EM1504725-001	06-MAY-2015 15:00	BH1_0.2			✓	
EM1504725-002	06-MAY-2015 15:00	BH1_0.4	✓	✓		✓
EM1504725-003	06-MAY-2015 15:00	BH2_0.2	✓	✓		✓
EM1504725-004	06-MAY-2015 15:00	BH2_0.3	✓	✓		✓
EM1504725-005	06-MAY-2015 15:00	BH2_0.4	✓	✓		✓
EM1504725-006	06-MAY-2015 15:00	BH2_0.6			✓	
EM1504725-007	06-MAY-2015 15:00	BH3_0.3			✓	
EM1504725-008	06-MAY-2015 15:00	BH3_0.4	✓	✓		✓
EM1504725-009	06-MAY-2015 15:00	BH3_0.5			✓	
EM1504725-010	06-MAY-2015 15:00	BH4_0.3	✓	✓		✓
EM1504725-011	06-MAY-2015 15:00	BH4_0.4	✓	✓		✓
EM1504725-012	06-MAY-2015 15:00	BH5_0.3	✓	✓		✓
EM1504725-013	06-MAY-2015 15:00	BH5_0.4			✓	
EM1504725-014	06-MAY-2015 15:00	BH5_0.6	✓	✓		✓
EM1504725-015	06-MAY-2015 15:00	BH5_0.7	✓	✓		✓
EM1504725-016	06-MAY-2015 15:00	BH6_0.2			✓	
EM1504725-017	06-MAY-2015 15:00	BH6_0.3	✓	✓		✓
EM1504725-018	06-MAY-2015 15:00	BH7_0.15			✓	
EM1504725-019	06-MAY-2015 15:00	BH7_0.2	✓	✓		✓
EM1504725-020	06-MAY-2015 15:00	BH7_0.4	✓	✓		✓
EM1504725-021	06-MAY-2015 15:00	BH7_0.65	✓	✓		✓
EM1504725-022	06-MAY-2015 15:00	BH8_0.3	✓	✓		✓
EM1504725-023	06-MAY-2015 15:00	BH8_0.5	✓	✓		✓
EM1504725-024	06-MAY-2015 15:00	BH9_0.15	✓	✓		✓
EM1504725-025	06-MAY-2015 15:00	BH9_0.25	✓	✓		✓
EM1504725-026	06-MAY-2015 15:00	BH9_0.5	✓	✓		✓
EM1504725-027	06-MAY-2015 15:00	BH10_0.15			✓	
EM1504725-028	06-MAY-2015 15:00	BH10_0.3	✓	✓		✓
EM1504725-029	06-MAY-2015 15:00	BH10_0.5			✓	

Proactive Holding Time Report

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

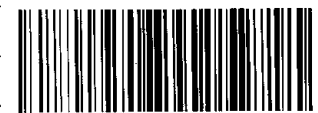


Chain of Custody

Address:	CARLISLE ST, CAR PARKS	Sampled by:	DP
Project:	CONTAMINATION ASSESSMENT	Date sampled:	6/5/15

Sample Number	Sample Type	Material Description	Testing Required									
			INZ6621 SOIL SCREEN	METALS - P16/1	HEX CL. - EG048	PAH-16 EPO75B						
1	BH1-0.2	S SAND	X									
2	BH1-0.4	S "		X	X	X						
3	BH2-0.2	S "		X	X	X						
4	BH2-0.3	S "		X	X	X						
5	BH2-0.4	S "		X	X	X						
6	BH2-0.6	S CLAY	X									
7	BH3-0.3	S SAND + ROCK	X									
8	BH3-0.4	S SILT		X	X	X						
9	BH3-0.5	S CLAY	X									
10	BH4-0.3	S SAND + ROCK		X	X	X						
11	BH4-0.4	S CLAY		X	X	X						
12	BH5-0.3	S SAND		X	X	X						
13	BH5-0.4	S SILT	X									
14	BH5-0.6	S "		X	X	X						
15	BH5-0.7	S CLAY		X	X	X						
16	BH6-0.2	S SAND + ROCK	X									
17	BH6-0.3	S SILT		X	X	X						
18	BH7-0.15	S SAND + ROCK	X									
19	BH7-0.2	S SAND		X	X	X						
20	BH7-0.4	S SILT		X	X	X						

Environmental Division
Melbourne
Work Order *R 1300*
EM1504725



Telephone : +61-3-8549 9600

Turnaround:	STANDARD	3 DAY	48 HOURS	24 HOURS
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NOTES	Report to: DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0466 752 892
	ALS QUOTE: ME/257/15

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	<i>Darren</i>	ALS	6/5	16.00



Chain of Custody

Address:	CARLISLE ST CAR PARKS	Sampled by:	DP
Project:	CONTAM. ASSESS ^T	Date sampled:	6/5/15

Sample Number	Sample Type	Material Description	Testing Required								
			NR4621 SOIL SCREEN	METALS -PIG/I	HEX CR -EG0#26	PAH-16 EP075B					
21	BH7-0.65	S CLAY		X	X	X					
22	BH8-0.5	S SAND		X	X	X					
23	BH8-0.5	S SILT		X	X	X					
24	BH9-0.15	S SAND		X	X	X					
25	BH9-0.25	S "		X	X	X					
26	BH9-0.5	S CLAY		X	X	X					
27	BH10-0.15	S SAND+rock	X								
28	BH10-0.3	S CLAY		X	X	X					
29	BH10-0.5	S "	X								

Turnaround:	<u>STANDARD</u>	3 DAY	48 HOURS	24 HOURS
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NOTES
Report to: DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0466 752 892
ALS QUOTE: ME/257/15

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	<i>DARREN</i>	<i>AM</i>	<i>6/5</i>	<i>16:05</i>



**Balaclava Retail Renewal
Precinct**

Geotechnical Investigation

Prepared for
Port Phillip City Council
Prepared by
Tonkin & Taylor Pty Ltd
Date
December 2018
Job Number
1008831.0.v1



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1 Introduction

Tonkin & Taylor Pty Ltd (T+T) has been engaged by Port Phillip City Council (PPCC) to undertake a geotechnical investigation for the proposed mixed use development on Alfred Street, Balaclava, VIC 3183. The site is currently being used as carparks at the front of Coles and Woolworths.

The purpose of this geotechnical investigation is to support the development of preliminary architectural schematic design and feasibility, and to provide preliminary design guidance on geotechnical matters including:

- Evaluation of ground and groundwater conditions encountered;
- An assessment of site classification in accordance with AS2870 for guidance purposes;
- An assessment of the earthquake risk in accordance with AS1170;
- An assessment and discussion of geotechnical foundation design parameters for spread and piled foundations;
- An assessment of geotechnical parameters for the preliminary design of retaining walls;
- A discussion on ease of excavation and potential groundwater control requirements;
- A discussion on potential impacts on adjacent structures by the proposed development.

The scope of work was undertaken in accordance with our proposal dated 5 November 2018¹ and was subsequently extended via a variation order on 19 November 2018² to include development of the two standpipes installed during the geotechnical investigation for environmental sampling in future.

This report presents the findings of the geotechnical investigation.

2 Proposed Structure and Scope of Investigation

It is understood that the project consists of a multi-level mixed use development for the length of Alfred Street and along Camden Street from opposite Alfred Street to Carlisle Street. The proposed development likely to have two to three level basements. The buildings will be up to 5 storeys and cover an area of between three to four hectares.

3 Regional Geology

The Geological Survey of Victoria, Melbourne map sheet (1:63,360), indicates that the near surface geology comprises Quaternary age alluvial deposits comprising clay, silt and sand.

The investigation found Tertiary period Brighton Group, typically comprising sands and clay soils, to be underlying alluvial deposits which in turn underlies by Silurian age Melbourne Formation.

4 Fieldwork

4.1 General

Fieldwork was carried out between 13 November 2018 and 21 November 2018. The fieldwork comprised:

- Five (5) boreholes to 20m depth;

¹ Tonkin & Taylor Pty Ltd (5 November 2018). Proposed Mixed use Development, Alfred Street, Balaclava – Geotechnical Investigation. Ref: 1008831.P1

² Tonkin & Taylor Pty Ltd (19 November 2018). Proposed Mixed use Development, Alfred Street, Balaclava – Geotechnical Investigation. Ref: 1008831.P2

- Standard penetration tests (SPT) at nominal 1.5m intervals;
- Development of the installed standpipes for environmental sampling by groundwater purging.

All fieldwork was carried out under the direction and full time presence of a T+T geotechnical engineer who was responsible for directing the extent of sampling and testing, performing the standard penetration test, logging the conditions encountered and directing the groundwater purging.

The borehole locations are shown on **Figure A1** in Appendix A. The coordinates of the boreholes were recorded using a GPS enabled mobile phone with some minor adjustments using the existing carpark layout plan shown on Google Earth. The accuracy of the locations is about $\pm 3\text{m}$.

4.2 Boreholes

A total of five boreholes numbered BH01 to BH05 were drilled to 20m below ground level to provide information on the subsurface conditions. Boreholes BH01 and BH02 were drilled within the car park site at the front of Woolworths while boreholes BH03 to BH05 at the car park site at the front of Coles.

All the boreholes were drilled within the parking lots except for borehole BH03 which was advanced through a concrete driveway. The borehole locations were confirmed on the site with PPCC and the nominated locations were cleared of any underground utilities prior to the fieldwork.

The boreholes were drilled using a track mounted Comacchio GEO 305 supplied and operated by Chadwick Geotechnics Pty Ltd. The drilling was performed using solid flight auger for the upper section to 3m depth followed by wash-boring to the termination depth.

Disturbed soil samples, Standard Penetration Test (SPT) samples and thin walled push tube (U_{63}) samples were collected during drilling, and were used to assist with logging and to provide soil samples for laboratory testing.

On completion, boreholes BH2 to BH04 were backfilled with drill cuttings and tamped in place to approximately 100mm below the surface. The surface was reinstated using cold-mix asphalt or pre-mix concrete where pavements were penetrated. Standpipes were installed in BH01 and BH05 to enable the measurement of groundwater levels. The standpipe boreholes were finished at the surface with lockable gatic covers. All the drilled locations were reinstated to flush with the surrounding ground surface.

The engineering field logs are presented in Appendix B. Material classification and logging techniques were carried out in accordance with the attached explanatory notes and wherever possible, material classifications have been correlated to the results of laboratory testing. However, it should be noted that field classifications of materials are a subjective opinion based on the personal experience of the engineer and may be open to alternative interpretations.

4.3 In-situ testing

SPTs were carried out at nominal 1.5m depth intervals as the drilling progressed. The test results are included on the relevant engineering logs in Appendix B.

In order to develop the standpipes that would be suitable for environmental sampling, groundwater purging was performed on the two installed standpipes. In total, 200 litres of water was purged from each standpipe.

5 Laboratory testing

Laboratory testing was undertaken by a NATA approved Chadwick Geotechnics laboratory. The testing comprised:

- One Atterberg limits tests
- Two sieve analyses; and
- Five moisture content tests

A summary of the test results are presented in Table 5.1. The laboratory test reports are included in Appendix C.

Table 5.1: Summary of laboratory test results

Borehole Ref.	Material	Layer Depth (m)	Moisture content (%)	Liquid Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)	(%) Passing		
							0.075mm	0.425mm	2.36mm
BH01	CLAY	3.0 – 3.3	26.7						
BH01	Silty SAND/Sandy SILT	10.5 – 11.0					54	96	98
BH02	Sandy CLAY	1.5 – 1.8	17.5						
BH02	Sandy CLAY	2.5 – 3.0		40	29	11			
BH03	Sandy CLAY	4.0 – 4.5	18.6						
BH05	Sandy CLAY	1.0 – 1.5	12.5						

6 Discussion and Recommendations

6.1 Surface conditions

The site is located within two open car parking areas. The existing surface is covered by asphalt pavement and concrete driveways. The asphalt and concrete pavements within the site appears to be in a relatively good condition. The ground surface is generally flat.

6.2 Subsurface conditions

The following summary of the subsurface stratigraphy is inferred from the available site investigation data, and as such only represents the conditions at the locations of the boreholes. Variation to the ground conditions are possible and potential vertical and lateral variabilities in the extent of the subsoil conditions must be recognised.

The boreholes indicate subsurface profile comprising the following four principal units:

- Unit 1: Fill (road pavement)
- Unit 2: Alluvium/Brighton Group
- Unit 3: Brighton Group
- Unit 4: Extremely weathered to highly weathered Siltstone (Melbourne Formation)

Unit 1 Fill

This unit was encountered below the asphalt pavement in Boreholes BH01, BH02, BH04 and BH05, and below concrete driveway in borehole BH03. The fill was variably described as sandy Gravel and Sand with gravel and it extends to a maximum depth of 0.6m below ground level.

Unit 2 Alluvium/Brighton Group

The fill was underlain by CLAY with sand, clayey SAND, sandy CLAY to depths between 3.5m and 4.5m below ground level. The material was described as medium plasticity, pale grey brown, mottled yellow brown, fine to medium grained, trace of fine to medium grained gravel, stiff to very stiff, and loose to medium dense. Atterberg Limits tests within the unit recorded Liquid Limits of 40% with corresponding Plastic Limits of 11%, resulting in Plasticity Index values between 29%. These values are indicative of a medium plasticity clay.

The unit is inferred to represent alluvial deposits or Brighton Group as there is no clear signs or characteristics of the recovered soil samples to distinguish the material between these two geological units.

Unit 3 Brighton Group

Brighton Group predominantly comprising clayey SAND, silty SAND and sandy SILT was encountered below Unit 2 and extended to depths between 15m and 16.3m. The soil was described as fine to coarse grained, yellow-brown, pale grey, brown, orange-brown, trace of fine to medium grained gravel, and loose to very dense. Sandy CLAY of low to medium plasticity and stiff to very stiff was encountered in borehole BH02 between 6.5m and 8.5m depth. Interbedded cemented band was encountered within the upper horizon in boreholes BH01 and BH02.

The upper horizon of this unit from 4m to 9m below ground surface, about 3.5m to 4.5m thick, was predominantly medium dense to dense, grading low to medium dense below this zone and towards the bottom of the unit.

Unit 4 Melbourne Formation

SILTSTONE decomposed into Clayey SILT was encountered below the Brighton Group at depth between 15m to 16.3m below ground level. Very low to low strength rock fabric, Point Load Index $I_{s(50)}$ is expected to be not greater than 0.3MPa by tactile assessment, is traceable in the matrix. The material was described as medium plasticity, pale grey mottled yellow-brown, with a hard consistency.

The material is inferred as extremely weathered (XW) to highly weathered (HW) SILTSTONE of Melbourne Formation and was not penetrated at the end of borehole at 20m below ground level.

A geological section (Section A-A) across the boreholes is shown in **Figure A2**.

6.3 Groundwater

To assist with the groundwater monitoring, the current geotechnical investigation has included installation of two standpipes which were installed in Boreholes BH01 and BH05. Standpipe in Borehole BH01 was installed to 16m depth with screening up to 10m depth and sand fill to 5m depth. Borehole BH02 standpipe was installed to 15m depth, screened to 2m depth and sand fill to 1.5 depth. **Figures B1** and **B2** in Appendix B show the details of the standpipes.

Initial groundwater measurements were taken on 19 November 2018 and water levels were recorded at the following depths:

- Borehole BH01: 3m below ground level

- Borehole BH05: 3.7m below ground level

At the request of PPCC, the standpipes were developed so that they would be suitable for environmental sampling. The standpipes were developed by purging with the aim to draw in regional groundwater and to remove water potentially left in the standpipe by washed boring. The standpipes were purged on 21 November 2018. The water was collected in drums and disposed of in a collection centre.

Prior to purging, water level in the standpipes was measured which returned 2.9m and 3.55m below ground level for BH02 and BH05 standpipe, respectively. A rubber hose was then inserted to the bottom of the standpipe and pumping commenced at the bottom to draw the water out from the standpipe. Initially, the water was observed to be murky and, as such, the rubber hose was kept at the bottom until the water became clear. The hose was then slowly withdrawn from the standpipe until 3m below the top of the standpipe while the pumping continued. Thereafter, the hose was kept in the standpipe until at least 200 litres of water was withdrawn.

Upon termination of the purging process, the water level in the standpipe was measured which returned a level of 2.94m and 3.55m in borehole BH01 and BH05, respectively. The recovery was noted to have taken place within a time span of about 10 minutes. This quick recovery indicates that the subsurface materials are highly permeable, which is expectable considering the material predominantly consisted of granular soils.

The above measurements represent the groundwater levels at the time of the observations. It is noted that groundwater level may fluctuate over time due to rainfall, weather condition and factors such as tidal influences.

6.4 Footing Systems

6.4.1 Site Classification

The near surface material comprises a road pavement consisting of asphalt, concrete, base and subbase course with a total thickness of up to 0.6m. The material is not suitable for footing support and it is recommended that all new footings be founded on the underlying natural soils comprising clays and sands.

The clay underlying the road pavement is medium plasticity. In accordance with AS2870-2011, Residential Slabs and Footings, a characteristic surface movement (y_s) similar to a Class M ($20\text{mm} < y_s \leq 40\text{mm}$) may be adopted for preliminary purposes. This classification was assessed by taking into consideration the area geology, soil profile encountered, and the climatic zone of the area. Further testing including shrink-swell tests would be required for a more detailed site classification assessment. However, it should be noted that the proposed development is not similar to a residential property as described in the standard and the site classification is provided for guidance purposes only.

6.4.2 Earthquake Rating

Seismic accelerations to be resisted by a structure are dependent upon the stiffness of the underlying soil and rock. Soft soils have the potential to amplify ground accelerations, requiring structures built upon them to be designed to resist a higher seismic coefficient. In accordance with AS 1170.4, the following factors are considered appropriate:

- Site sub-soil class Ce (Shallow Soil site) as the depth of the natural soils does not exceed those listed in Table 4.1 of the standard.
- Hazard Factor (Z) of 0.08 (Melbourne).

6.4.3 Spread Footings

It is understood that the proposed development is likely to have two to three level basement. Therefore, it is anticipated that majority of the spread footings (if adopted) within the basement excavation footprint will be founded within Brighton Group comprising sand, clay and silt. Shallow footings located outside the basement are recommended to be founded on natural clays and sands (Alluvium/Brighton Group).

Based upon published information and correlations with in-situ test and laboratory test results, the bearing capacity presented in Table 6.1 are considered suitable for spread footings.

Table 6.1: Spread footing bearing capacity

Unit	Founding Material	Allowable Bearing Pressure ¹ (kPa)	
		Strip Footings	Pad Footings
1	FILL	Not suitable	
2	Sandy CLAY/Clayey SAND: Stiff or better, medium dense or better [Alluvium/Brighton Group] ²	80	100
3	Clayey SAND/Clayey SILT/Sandy CLAY: very stiff or better, medium dense to dense or better [upper horizon Brighton Group] ³	80	100
	Silty SAND/Sandy SILT/Clayey SAND, loose to medium dense [lower horizon Brighton Group] ³	50	50

Notes:

1. Factor of safety of 3.0. Footings are at least 1.5m wide. Smaller footing will need to be assessed on case-by-case basis.
2. Groundwater table is located not shallower than the footing width from the base of the footing
3. Groundwater table is located within the footing width from the base of the footing. The impact of groundwater has been considered in the bearing capacity calculations.

It should be noted that the following assumptions have been made in the derivation of the allowable bearing pressures provided in Table 6.1:

- For footings founded on granular material, the effect of groundwater has been taken into account in the calculations of the allowable bearing capacity;
- Footings located outside the basement is assumed to be founded on Unit 2 natural material;
- Footings are not located near excavations or downsloping batters;
- Footings are subject to concentric loadings only;
- Effects of unloading due to basement excavation can be reasonably ignored;
- Material of similar or better quality is available within a distance of at least two times (2x) the footing width below the footing; and
- The recommended allowable bearing capacity does not apply to a raft foundation.

Further advice should be sought from T+T if a specific footing is required to be designed based on different conditions than those described above.

It must be noted that the design of spread footing is likely be governed by settlement criteria other than bearing capacity. A detailed analysis should be carried out to assess the expected footing settlement with respect to the design load. For footings located within the basement, the analysis should consider the effect of removing the overburden pressure (unload-reload condition) after

excavation. The elastic modulus value of the founding material as presented in Table 6.4 can be adopted for preliminary settlement estimation.

Cohesive soils can suffer softening and degradation on exposure and wetting. It is therefore recommended that exposed surfaces are protected as soon as practicable with compacted granular fill or blinding. It is also recommended that the founding stratum is inspected by a suitably experienced geotechnical engineer to confirm actual conditions are in accordance with design ground models.

6.4.4 Pile Footing

Consideration could be given to supporting the proposed building on pile footings. Bored piles or Continuous Flight Auger (CFA) piles is considered appropriate while the use of driven piles would be limited due to proximity of the site to the existing buildings. Given the presence of groundwater and the permeable subsurface materials, the use of bored piles may be limited as it will require the bored holes to be stabilised during boring.

Weathered siltstone is considered suitable to support the proposed structure. Based upon in-situ strength tests, laboratory test results and published guidelines³, the design parameters appropriate for the design of a single bored pile are presented in Table 6.2. It should be noted that less weathered SILTSTONE may be present below the current investigation depth of 20m. The better quality SILTSTONE should be assessed for its ultimate unit stresses if encountered.

Table 6.2: Bored pile design parameters

Unit	Founding Material	Ultimate Unit Stresses (kPa)	
		End Bearing	Shaft Adhesion
1	FILL	Not suitable	
2	Sandy CLAY/Clayey SAND: Stiff or better, medium dense or better ² [Alluvium/Brighton Group]	675	45
3	Clayey SAND/Clayey SILT/Sandy CLAY: very stiff or better, medium dense to dense or better ³ [upper horizon Brighton Group]	1000	50
	Silty SAND/Sandy SILT/Clayey SAND, loose to medium dense [lower horizon Brighton Group]	675	45
4	Extremely weathered to highly weathered siltstone	3000	150

In order to assess pile capacity, a geotechnical strength reduction factor (ϕ_g) is applied to the above ultimate end bearing and the ultimate side friction presented in Table 6.2 in accordance with Australian Standard, AS 2159-2009 Piling – Design and installation. The appropriate ϕ_g value will depend on many factors associated with the site, design, installation and testing, some of which are not known at the time of preparing this report. The various factors to be considered include the following:

- Geological complexity of the site,
- Extent of geotechnical investigation with consideration of pile founding levels,
- Available geotechnical data and method of assessment of geotechnical parameters,

³ Sinclair, T.J.E. & Every, C.P. (2006) Designing for Rock Socket Piles. *Earthquakes and Urban Development: New Zealand Geotechnical Society 2006 Symposium*, (pp. 341-351). Nelson.

- Design experience and methods adopted,
- Level of construction control and performance monitoring, and
- Pile testing undertaken.

Based on some typical broad assumptions regarding the construction of pile footing on this site, it is considered that a ϕ_g of 0.45 may be adopted for preliminary pile design purposes, assuming no load testing of constructed piles is to be undertaken. Nonetheless, designers should make their own assessment of appropriate ϕ_g values based on the particular risk circumstances, experience and testing regime appropriate for their design and a different value may apply.

In accordance with AS2159-2009, higher ϕ_g values may be adopted if the following apply:

- The designer has extensive experience in similar geotechnical conditions;
- High redundancy systems are adopted;
- Load testing is undertaken on constructed piles; and
- Detailed professional geotechnical supervision is undertaken.

An appropriate load factor also needs to be applied to the pile loading

To fully develop the end bearing capacity within a geological unit, the pile should be socketed at least 3 pile diameters into the design founding material, for instance, weathered SILTSTONE. Alternatively, the end bearing capacity may be reduced to less than 67% of the presented value based upon negligible embedment. Interpolation of the end bearing capacity may be undertaken between these embedment depths.

Uplift forces may also be resisted by piles. Specific design will need to be undertaken to confirm that the piles are embedded at a sufficient depth. For preliminary assessment purposes, the skin friction values presented in Table 6.2 should be reduced by 25% for piles resisting uplift. The potential for cone pull-out failure shall also be assessed for piles subjected to tension load.

It is recommended that bored pile excavations are assessed by a geotechnical engineer during construction to ensure that founding conditions are consistent with those on which the design recommendations are based. Care should be taken to ensure that the base and side of any pile excavations are clean of loose material, water and clay smear prior to pouring concrete.

6.5 Excavations and retaining walls

6.5.1 Excavatability

Basement excavations are expected to encountered fill underlain natural clay, sand and silt of Alluvium and Brighton Group units. Medium dense to dense sands containing gravel and stiff to very stiff clays were encountered within these units while cemented bands were encountered from 3.5m to 6m depth in borehole BH01 and 7m to 8.5m depth in borehole BH02.

The excavation conditions within the site will not be difficult and can be achieved using conventional earthmoving equipment such as backhoes and tracked excavators. Minor ripping maybe required locally where bands of stronger cemented soils are encountered during excavation.

6.5.2 Temporary batter stability

Worksafe Victoria recommends that excavations deeper than 1.5 m should be battered, benched or shored to provide a safe working environment. It is anticipated that retaining walls will be constructed top-down for the basement excavation and temporary unsupported excavations greater than 3 m will not be required. Permanent batters are not anticipated at the site.

The recommended temporary batter slopes are presented in Table 6.3.

Table 6.3: Recommended temporary batter slopes (up to 3m high)

Unit	Material	Short term (up to 2 weeks)
1	FILL	1V:2H, or gentler
2	Sandy CLAY/Clayey SAND: Stiff or better, medium dense or better ² [Alluvium/Brighton Group]	1V:1H, or gentler
3	Clayey SAND/Clayey SILT/Sandy CLAY: very stiff or better, medium dense to dense or better ³ [upper horizon Brighton Group]	1V:1H, or gentler
	Silty SAND/Sandy SILT/Clayey SAND, loose to medium dense [lower horizon Brighton Group]	1V:2H, or gentler

Where excavations are to remain open for a longer period (>2 weeks), it is recommended that further geotechnical advice is sought. Surcharge loading on the unsupported slope should be eliminated by maintaining a distance from the crest equal to the height of the temporary cut.

Notwithstanding the above, it is recommended that the slopes to be monitored at regular intervals to check for signs of instability throughout the construction period. This may be undertaken by placing a string line along the crest of the slope with pins installed at intervals beneath. Monitoring the offset distance of the pins from the string line can provide early indication of ground movement. Where this is observed, work should cease within the affected area and the advice of a suitably experienced and qualified geotechnical engineer sought.

The basement excavation will require permanent retaining walls to be constructed. It is envisaged that these will consist of top down constructed soldier or contiguous pile walls. On the basis of correlations with the measured in-situ shear strengths, published guidelines and our experience with similar soils, the effective strength parameters as set out in Table 6.4 are considered appropriate for the calculation of lateral earth pressures on the basement walls.

It should be noted that less weathered material may be present below the XW/HW Siltstone current encountered up to the termination depth of 20m. The better quality siltstone should be assessed for its effective strength parameters if encountered.

Table 6.4: Preliminary retaining wall design parameters

Stratum	Approximate depth to top of layer (m bgl)	Unit weight (γ) kN/m ³	Undrained Cohesion (c_u) kPa	Cohesion (c') kPa	Friction Angle (ϕ') degrees	Young's Modulus (E') MPa	Coefficient of Earth pressure 'active' (k_a)	Coefficient of Earth pressure 'at rest' (k_o)
Stiff Sandy CLAY/ Medium Dense Clayey SAND [Alluvium/Brighton Group]	0.6	19	---	5	25	25	0.4	0.6
Medium Dense to Dense Clayey SAND/Clayey SILT/ Very still Sandy CLAY [upper horizon Brighton Group]	3.5 – 4.5	20	---	1	33	50	0.3	0.5
Loose to medium Silty SAND/Sandy SILT/Clayey SAND, [lower horizon Brighton Group]	7.5 - 10	18.5	---	1	30	28	0.35	0.5
SILTSTONE (XW/HW)	15. – 16.3	21	300	13	30	80	0.35	1.0

Design of piled retention systems in soils are usually carried out using industry standard finite element analysis software such as WALLAP or PLAXIS.

It is recommended that the parameters shown in Table 6.4 are used for retaining wall design. The design of the retaining walls should also include numerical modelling to assess potential wall deformations.

During construction, the wall will be cantilevered and free to move, with propping only occurring when the floor slabs are constructed. It is likely that the retaining walls will require multiple levels of temporary anchors to facilitate the excavation.

6.5.3 Ground anchors

Given the proposed depth of the excavation, ground anchors are expected to be required to provide temporary support to the basement wall system.

The design and construction of ground anchors should consider the presence of neighbouring basement levels (including anchors and piled foundations), underground services, buried structures, or future developments. As anchors are installed close to the site boundary, it may be preferable or required to use removable ground anchors.

Bond strength of ground anchors will be a function of the installation methods adopted as well as the ground characteristics, which should be discussed with the specialist subcontractor engaged to assess the required size and length of the anchor to achieve the design load.

As a preliminary guide to the design of ground anchors, an allowable bond stress of 50kPa may be adopted for air flush drilled anchors supported in the natural stiff or better clay.

In sand it is considered that the anchor capacity may be dependent on the grouting pressure that can be achieved and specific advice should be sought from specialist subcontractors.

Anchors should be proof loaded and tested during construction to ensure that design loads are being achieved. Allowance should also be made for some loss of capacity due potential creep.

To limit the interaction between the ground anchor bond length and the zone of active ground movement in the vicinity of the excavation, ideally the free length of ground anchors should extend to a plane extending at 45° to the horizontal behind the base of the excavation. However, this is not always practical, particularly where anchors are installed close to the site boundary and the anchor length may need to be limited. In these instances, the interaction between the anchors and the rest of the excavation support system needs to be considered in detail, including reduced stiffness and capacity of the anchors. It is recommended that the anchors be modelled as part of the retention system in a finite element analysis.

6.5.4 Groundwater control

As noted in Section 6.3, the groundwater levels measured on 19 and 21 November 2018 in the standpipes in Boreholes BH01 and BH05 were between 2.9m and 3m, and between 3.55m and 3.7m, respectively. It should be noted that groundwater levels are subject to variations due to the influence of rainfall, temperature, local drainage, and the seasons. It is possible that the groundwater table may be different from these measurements at the time of the construction.

The proposed excavation for basement construction is expected to intercept the groundwater and inflows would be expected. This may require the use of dewatering measures such as sump pumping, spear points or well during excavation to assist construction and minimise softening of soils exposed at the base of excavations.

Excessive dewatering of groundwater from the site may not be permissible. Under this circumstance, a tanked retaining wall would be required.

Uplift from groundwater should be considered in the design of the basement structures in the long term conditions.

6.5.5 Basement drainage

The design of the basement drainage system will need to consider perched water, seepage and the local groundwater table. At the time of our investigation standpipes indicated groundwater level at about 2.9m to 3.7m below the existing ground level.

It is expected that the proposed basement may be designed as a drained basement or an undrained basement (tanked option). A drained option is likely to be limited to not more than one level basement considering the groundwater level was observed to be at around 3m below ground level at the time of the geotechnical investigation and the presence of permeable subsurface materials. If a drained basement is to be adopted adequate drainage will need to be provided behind the walls such that hydrostatic pressure build-up does not occur. For an undrained (tanked) basement, hydrostatic pressures will need to be included in the retained ground and across the floor of the excavation in the structural design.

In deciding the appropriate basement system to be adopted, the designer should consider some crucial factors such as those presented below:

- Groundwater levels and fluctuations;
- The likely maximum groundwater level which may apply uplift or buoyant forces to the basement floor slab;

- The volume, quality, treatment and disposal of groundwater inflow, including the associated costs;
- Maintenance requirements to ensure the drainage system continues to operate for the required design life;
- The implications of a failure of the drainage system on the structure; and
- The potential effect of any drawdown of the groundwater on settlement of nearby buildings.

The design of basement drainage systems may require a detailed assessment of groundwater depths and volumes. At this stage groundwater flow rates are not known although from the groundwater purging exercise as described in Section 6.3, the inflow is rapid. In order to obtain accurate estimates of likely groundwater inflow rates, further investigations and assessments including on-going groundwater monitoring and pump tests would be required.

6.5.6 Adjacent structures

The nearest adjacent structures include single storey and double storey commercial and residential buildings, and one three storey commercial building, which are located around the site boundary. It is anticipated that the adjacent structures will be sensible to the proposed excavation as majority of the structures are masonry. Buried services around the site include gas, sewer, electrical cable, Telstra lines, Fibre optic cable and etc. which the construction works will need to be managed to ensure the integrity of the adjacent buried services are not adversely affected. This includes, but is not limited to, the impact of potential vibrations, removal of overburden and advancement of temporary ground anchors (if use).

7 Implication

Recommendations and options in this report are based on data from (boreholes or pits or other). The nature and continuity of subsoil away from the (boreholes/pits or other) are inferred but it must be appreciated that actual conditions could vary from the assumed model.

During excavation and construction, the site should be examined by an engineer or engineering geologist competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. We would be please to provide this service to you (or name of client) and believe your project would benefit from such continuity. However, it is important that we be contacted if there is any variation in subsoil conditions from those described in the report.

8 Applicability

This report has been prepared for the exclusive use of our client Port Phillip City Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd

Report prepared by:

Authorised for Tonkin & Taylor Pty Ltd by:



.....
Roger Lim
Principal Geotechnical Engineer

.....
Trevor Smith
Technical Director

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Appendix A: Figures


Figure A1 – Borehole Layout Plan

Figure A2 – Inferred Geological Section

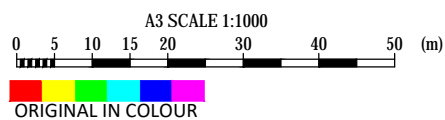


Exceptional thinking together www.tonkintaylor.co.nz

LEGEND

 **BH01**
BOREHOLE LOCATIONS

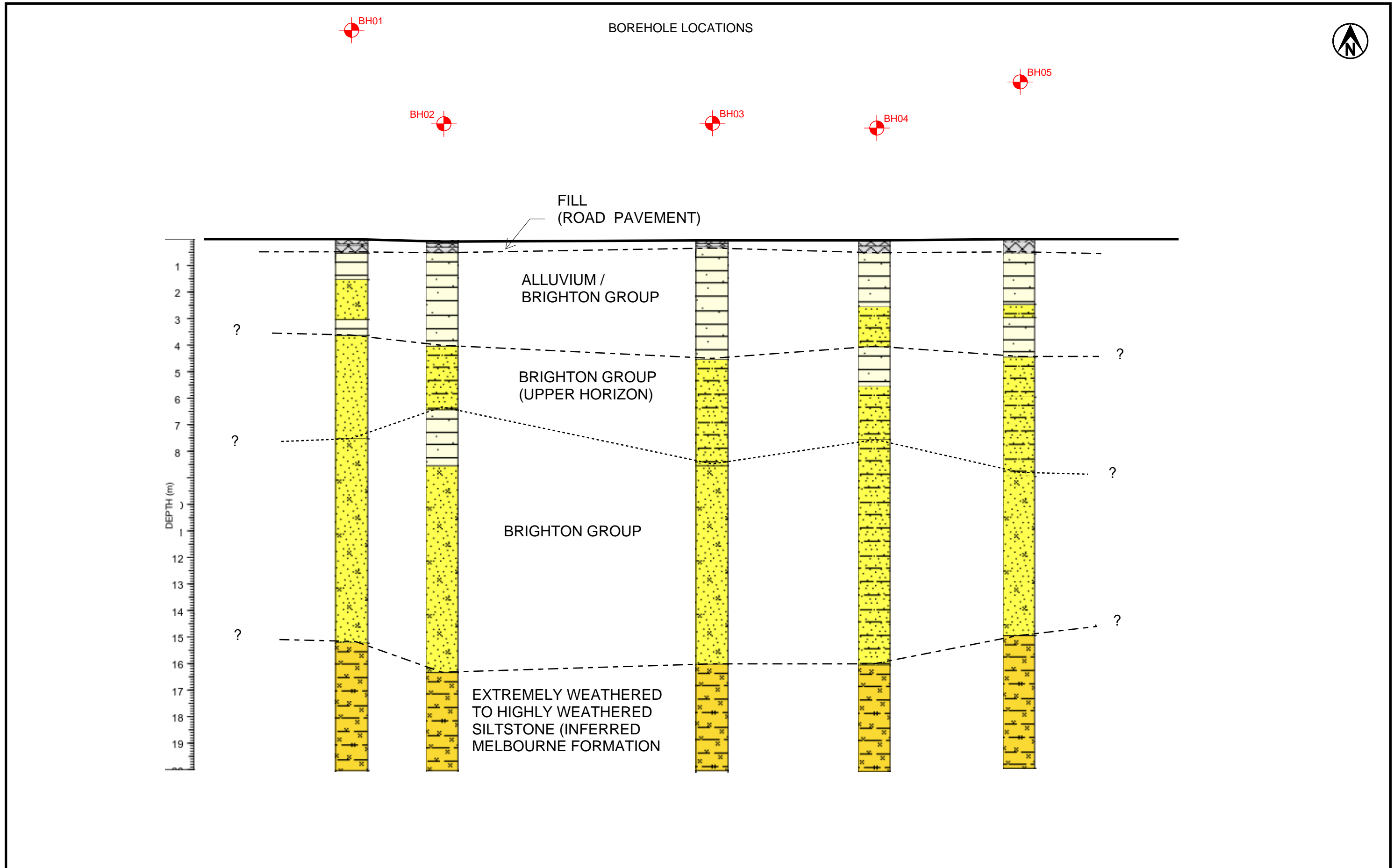
AERIAL PHOTO SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD
IMAGERY DATE: 19/10/2018.



PROJECT No.	1008831.1000		
DESIGNED	KMJA	Nov.18	
DRAWN			
CHECKED			
APPROVED	DATE		

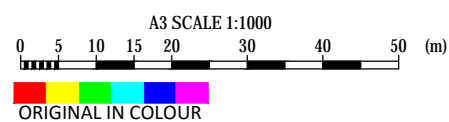
CLIENT	PORT PHILLIP CITY COUNCIL		
PROJECT	BALACLAVA RETAIL RENEWAL PRECINCT		
TITLE	GEOTECHNICAL INVESTIGATION SITE PLAN		
SCALE (A3)	1:1000	FIG No.	FIGURE A1
			REV

UNREVISION 1



LEGEND	
	REFER TO BOREHOLE LOGS

AERIAL PHOTO SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD
IMAGERY DATE: 19/10/2018.



PROJECT No. 1008831.1000		
DESIGNED	KMJA	Nov.18
DRAWN		
CHECKED		
APPROVED	DATE	

CLIENT	PORT PHILLIP CITY COUNCIL
PROJECT	BALACLAVA RETAIL RENEWAL PRECINCT
TITLE	INFERRED GEOLOGICAL SECTION
SCALE (A3)	1:1000
FIG No.	FIGURE A2
REV	

Appendix B: Borehole logs

- T+T Explanatory sheet
- Borehole logs
- Standpipe details for borehole BH01 and BH05

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806960 mN (UTM55H) 323310 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 16/11/2018 FINISH DATE: 16/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
SA			FILL	ASPHALT (150mm thick)					
			FILL	Sandy GRAVEL, fine to coarse grained, subangular to subrounded, dark brown. Sand, fine to coarse grained.	M D-M	D-VD D	0.3-0.4		
		Alluvium/Brighton Group	CL	SAND with gravel, fine to coarse grained, brown. Gravel, fine to coarse grained, subangular. CLAY with sand, medium plasticity, pale grey mottled yellow-brown. Sand, fine to medium grained.	M	VSt	0.5 0.8		
			SC	Clayey SAND trace gravel, fine to coarse grained, pale grey-brown mottled yellow-brown. Gravel, fine to medium grained, subangular.	L-MD		1.5-2.5 SPT 4 5 N=10		
WB			CL	CLAY with sand, medium plasticity, pale grey mottled yellow-brown. Sand, fine to medium grained. 3.5m: Sand becoming fine to coarse grained.	St		3.0 SPT 2 4 5 N=9		
		Brighton Group Pavement	SC	Clayey SAND, fine to coarse grained, yellow-brown mottled pale grey. Interbedded cemented band within the range.	MD-D		4.5 SPT 10 12 13 N=25		

COMMENTS:

Hole Depth
20m



PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806960 mN (UTM55H) 323310 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 16/11/2018 FINISH DATE: 16/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group	SC	[CONT] Clayey SAND, fine to coarse grained, yellow-brown mottled pale grey. Interbedded cemented band within the range.		5.0-6.0			
				6.4m: Trace gravel, yellow-brown, orange mottled pale grey. Gravel, fine grained, subangular to subrounded.		SPT 10 15 22 N=37			
				Silty SAND/Sandy SILT trace gravel, fine to medium grained, yellow-brown. Gravel, fine to medium grained, subangular.	M MD	7.5	SPT 7 12 13 N=25		
				8.5m: Sand becoming fine to coarse grained.		8.5			
				9.0m: Sand becoming fine to medium grained. Interbedded Silty SAND/Sandy SILT.		9.0	SPT 3 4 8 N=12		
				10.0m: Sand becoming fine grained.		9.5			

COMMENTS:

Hole Depth
20m






PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806960 mN (UTM55H) 323310 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 16/11/2018 FINISH DATE: 16/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND/Sandy SILT trace gravel, fine to medium grained, yellow-brown. Gravel, fine to medium grained, subangular. 13.0m: Increase in silt content.	L-MD	10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5	SPT 3 3 6 N=9 U63 SPT 2 6 10 N=16 SPT 2 3 5 N=8		

COMMENTS:

Hole Depth
20m

PROJECT Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806960 mN (UTM55H) 323310 mE		METHOD: SA		START DATE: 16/11/2018	
R.L.: NA		EQUIPMENT: Comacchio GEO305		FINISH DATE: 16/11/2018	
DATUM: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL					TESTING						
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND trace gravel, fine to medium grained, yellow-brown. Gravel, fine to medium grained, subangular.					SPT 1 2 7 N=9		15.2 - 20.0m: Inferred extremely weathered to highly weathered Siltstone/ Sandstone
		Melbourne Formation		Clayey SILT, medium plasticity, pale grey mottled yellow-brown. Trace of very low to low, dark grey siltstone bands.	D-M	H		15.5			
				17.5m: Trace of low strength, dark grey siltstone bands.				16.0			
								16.5	SPT 17 25/70mm		
								17.0			
								17.5			
								18.0	SPT 25/70mm		
								18.5			
								19.0			
								19.5			

COMMENTS: 20m: Target Depth

Hole Depth
20m



Tonkin+Taylor

BOREHOLE LOG

INVESTIGATION Id.:
BH02
 SHEET: 1 OF 4

PROJECT: Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806938 mN (UTM55H) 323334 mE		METHOD: SA		START DATE: 19/11/2018	
R.L.: NA		EQUIPMENT: Comacchio GEO305		FINISH DATE: 19/11/2018	
DATUM: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL				TESTING								
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES	DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
SA		Pavement	FILL	ASPHALT (120mm thick)								
			FILL	Sandy GRAVEL, fine to coarse grained, subangular to subrounded, dark brown-grey.	M	D						
			FILL	SAND, fine to medium grained, brown.	D-M	MD						
SA		Alluvium/Brighton Group	CL	Sandy CLAY, medium plasticity, pale grey mottled yellow-brown. Sand, fine to medium grained.	M	St		0.5				
				2.5m: Becoming grey, pale grey.								
WB		Brighton Group	SC	Clayey SAND, fine to coarse grained, pale grey mottled yellow-brown.		MD		4.0				

COMMENTS:

Hole Depth 20m



General Log - AU - 3/12/2018 1:37:49 PM - Produced with Cone-GS by GeiRec

Scale 1:25

These logs are to be read in conjunction with the full Tonkin & Taylor report

Rev.: A



PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806938 mN (UTM55H) 323334 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 19/11/2018 FINISH DATE: 19/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING						
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS	
WB		Brighton Group		[CONT] Clayey SAND, fine to coarse grained, pale grey mottled yellow-brown.		5.5				
				CL	Sandy CLAY trace gravel, medium plasticity, pale grey mottled yellow-brown and brown. Sand, fine to medium grained; gravel, fine to medium grained, subangular.	M	St	6.0	SPT 3 4 7 N=11	
			SC	7.0m: Becoming brown, increasing gravel content. Sand, predominantly medium grained, trace of cemented band.			6.5-7.0			
				Silty SAND, fine to medium grained, brown.	L-MD	7.0				
						7.5	SPT 5 6 N=12			
						8.0	8.0-8.5			
						8.5				
						9.0	SPT 3 2 5 N=7			
						9.5				

COMMENTS:

Hole Depth
20m



PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806938 mN (UTM55H) 323334 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 19/11/2018 FINISH DATE: 19/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND, fine to medium grained, brown.		10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5	SPT 2 4 7 N=11 SPT 3 5 8 N=13 SPT 2 4 8 N=12		

COMMENTS:

Hole Depth
20m

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806938 mN (UTM55H) 323334 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 19/11/2018 FINISH DATE: 19/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND, fine to medium grained, brown.		15.5	SPT 2 2 3 N=5		
		Melbourne Formation		Clayey SILT, medium plasticity, pale grey mottled yellow-brown. Trace of low to very low strength, dark grey siltstone bands.	D-M H	16.5 17.0 17.5 18.0 18.5 19.0 19.5	SPT 5 18 25/120mm SPT 25/120mm SPT 25/100mm		16.3 - 20.0m: Inferred extremely weathered to highly weathered Siltstone/ Sandstone

COMMENTS: 20m: Target Depth

Hole Depth
20m

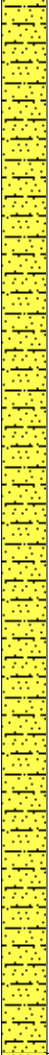



PROJECT: P- Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806942 mN (UTM55H) 323409 mE	METHOD: SA	START DATE: 15/11/2018
R.L.: NA	EQUIPMENT: Comacchio GEO305	FINISH DATE: 15/11/2018
DATUM: NA	TECHNICIAN: PWIL	LOGGED BY: JSPH
	CONTRACTOR: Chadwick Geotechnics	CHECKED BY: CHL

GEOLOGICAL				TESTING								
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES	DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
SA		Pavement	FILL	CONCRETE. (135mm thick)								
			FILL	Sandy GRAVEL, fine to coarse grained, subrounded to subangular, dark brown. Sand, fine to coarse grained.	M	D						
			FILL	SAND with gravel, fine to coarse grained, brown. Gravel, fine to medium grained, subrounded to subangular.	D-M	MD-D						
WB		Alluvium/Brighton Group	CL	SANDY CLAY trace gravel, medium plasticity, pale grey mottled yellow-brown. Sand, fine to medium grained; gravel, fine grained, subrounded to subangular.	M	Vst		0.5				
				3.0m: Sand becoming fine grained.				0.8				
								1.5	1.5-2.5 SPT 4 8 7 N=15			
								3.0	SPT 3 7 8 N=15			
								4.0	4.0-4.5			
		Brighton Group	SC	Clayey SAND, fine grained, pale grey mottled yellow-brown.		MD		4.5	SPT 9 11 9 N=20			

COMMENTS:

Hole Depth
20m







PROJECT: Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806942 mN (UTM55H) 323409 mE		METHOD: SA		START DATE: 15/11/2018	
R.L.: NA		EQUIPMENT: Comacchio GEO305		FINISH DATE: 15/11/2018	
DATUM: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL				TESTING								
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES	DCP <small>Dynamic Cone Penetrometer</small>	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Clayey SAND, fine grained, pale grey mottled yellow-brown.				5.5				
				6.1m: Becoming orange, yellow-brown, with some fine to medium grained, subangular gravel.	M	D-VD		6.0	SPT 8 25/70mm			
								6.5				
								7.0				
								7.5	SPT 25/100mm			
								8.0				
								8.5				
			SC	Silty SAND/Sandy SILT with clay, low plasticity, fine grained, yellow-brown.		L		9.0	SPT 4 3 4 N=7			
								9.5				

COMMENTS:

Hole Depth
20m



PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806942 mN (UTM55H) 323409 mE	METHOD: SA	START DATE: 15/11/2018
R.L.: NA	EQUIPMENT: Comacchio GEO305	FINISH DATE: 15/11/2018
DATUM: NA	TECHNICIAN: PWIL	LOGGED BY: JSPH
	CONTRACTOR: Chadwick Geotechnics	CHECKED BY: CHL

GEOLOGICAL				TESTING						
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND/Sandy SILT with clay, low plasticity, fine grained, yellow-brown.			10.5 - 11.5	SPT 1 3 5 N=8		
							12.0	SPT 2 4 4 N=8		
							13.5	U63		
							14.0	SPT 2 2 5 N=7		
							14.5			

COMMENTS:

Hole Depth
20m

PROJECT: Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806942 mN (UTM55H) 323409 mE		METHOD: SA		START DATE: 15/11/2018	
R.L.: NA		EQUIPMENT: Comacchio GEO305		FINISH DATE: 15/11/2018	
DATUM: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL					TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND/Sandy SILT with clay, low plasticity, fine grained, yellow-brown.			15.5	SPT 3 3 4 N=7		
		Melbourne Formation		Clayey SILT, medium plasticity, pale grey mottled red and yellow-brown. Trace of low to very low strength, dark grey siltstone bands.	D-M	H	16.0			16.0 - 20.0m: Inferred extremely weathered to highly weathered Siltstone/ Sandstone
							16.5	SPT 16 25/50mm		
							17.0			
							17.5			
							18.0			
							18.5			
							19.0			
				19.0m: Becoming dark grey mottled yellow-brown and red.			19.5	SPT 10 24 25/100mm		

COMMENTS: 20m: Target Depth

Hole Depth
20m

PROJECT: Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806936 mN (UTM55H) 323458 mE		METHOD: SA		START DATE: 14/11/2018	
		EQUIPMENT: Comacchio GEO305		FINISH DATE: 14/11/2018	
R.L.: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
DATUM: NA		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL					TESTING							
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS	
SA		Pavement	FILL	ASPHALT (200mm thick).								
			FILL	SAND with gravel, fine to coarse grained, brown. Gravel, fine grained, subrounded to subangular.	D-M	D						
		Alluvium/Brighton Group	CL	Sandy CLAY trace gravel, medium plasticity, yellow-brown mottled pale grey. Sand, fine to coarse grained; gravel, fine to medium grained, subrounded to subangular.	M	vSt		0.5				
			SC	Clayey SAND trace gravel, fine to coarse grained, yellow-brown mottled pale grey. Gravel, fine to medium grained, subrounded to subangular.		MD		1.5	1.5-2.5 SPT 5 7 9 N=16			
WB		Brighton Group	CL	Sandy CLAY trace gravel, medium plasticity, pale grey, yellow-brown. Sand, fine to coarse grained; gravel, fine to medium grained, subrounded to subangular.		vSt		2.5				
								3.0	SPT 5 8 7 N=15			
								3.5				
								4.0				
								4.5	SPT 6 9 9 N=18			

COMMENTS:

Hole Depth
20m



PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806936 mN (UTM55H) 323458 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 14/11/2018 FINISH DATE: 14/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING						
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS	
WB		Brighton Group	[CONT]	Sandy CLAY trace gravel, medium plasticity, pale grey, yellow-brown. Sand, fine to coarse grained; gravel, fine to medium grained, subrounded to subangular.						
			SC	Clayey SAND trace gravel, fine grained, pale grey, yellow-brown. Gravel, fine to medium grained, subrounded to subangular.	M	MD	5.5			
			SC	Clayey SAND, fine grained, yellow-brown, pale grey, orange brown.		L-MD	7.5	SPT 10 15 15 N=30		
						7.5	SPT 6 7 N=13			
						8.0				
						8.5				
						9.0	SPT 4 4 6 N=10			
						9.5	9.5-10.0			

COMMENTS:

Hole Depth
20m









PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806936 mN (UTM55H) 323458 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 14/11/2018 FINISH DATE: 14/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Clayey SAND, fine grained, yellow-brown, pale grey, orange brown. 12.0m: Trace gravel, yellow-brown. Gravel, medium grained, subangular; Sand becoming fine to medium grained. 14.5m: Sand becoming fine to coarse grained. Gravel, fine to medium grained, subangular.			U63 SPT 3 4 6 N=10 SPT 1 1 18 N=19 SPT 2 4 7 N=11 14.5-15.5		

COMMENTS:

Hole Depth
20m

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806936 mN (UTM55H) 323458 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 14/11/2018 FINISH DATE: 14/11/2018
R.L.: NA	TECHNICIAN: JSPH	LOGGED BY: JSPH
DATUM: NA	CONTRACTOR: Chadwick Geotechnics	CHECKED BY: CHL

GEOLOGICAL					TESTING							
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES	DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Clayey SAND, fine grained, yellow-brown, pale grey, orange brown. 15.4m: Increasing clay content					SPT 2 4 8 N=12			
		Melbourne Formation		Clayey SILT, medium plasticity, pale grey mottled red and yellow-brown. Trace of low to very low strength, dark grey siltstone.	D-M	H				SPT 25/100mm		
									SPT 25/80mm			
									SPT 25/80mm			
									19-19.5			
									SPT 25/80mm			

COMMENTS: 20m: Target Depth

Hole Depth
20m



Tonkin+Taylor

BOREHOLE LOG

INVESTIGATION Id.:
BH05
 SHEET: 1 OF 4

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806946 mN (UTM55H) 323491 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 13/11/2018 FINISH DATE: 13/11/2018
R.L.: NA	TECHNICIAN: PWIL	LOGGED BY: JSPH
DATUM: NA	CONTRACTOR: Chadwick Geotechnics	CHECKED BY: CHL

GEOLOGICAL				TESTING							
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS	
SA		Pavement	FILL	ASPHALT (180mm thick)							
			FILL	SAND with gravel, fine to coarse grained, brown. Gravel, fine to medium grained, subrounded to subangular.	D	MD		0.5	0.5		
		Alluvium/Brighton Group	CL	Sandy CLAY trace gravel, medium plasticity, pale grey, yellow-brown. Sand, fine to coarse grained; gravel, fine to medium grained, subangular to subrounded.	M	St		1.0	U63		
			SC	Clayey SAND trace gravel, fine to coarse grained, yellow-brown, pale grey. Gravel, fine to medium grained, subrounded to subangular.		MD		1.5	SPT 6 7 7 N=14		
WB		Alluvium/Brighton Group	CL	Sandy CLAY trace gravel, medium plasticity, pale grey mottled yellow-brown. Sand, fine grained; gravel, fine to medium grained, subrounded to subangular.		St		2.0			
			SC	Clayey SAND trace gravel, fine to coarse grained, yellow-brown, pale grey. Gravel, fine to medium grained, subrounded to subangular.		MD		2.5	SPT 3 7 7 N=14		
		Brighton Group	SC	Clayey SAND trace gravel, fine grained, pale grey mottled yellow-brown. Gravel, fine to medium grained, subangular.		MD		3.0			
							3.5				
							4.0				
							4.5	SPT 5 7 8 N=15			

COMMENTS:

Hole Depth
20m

General Log - AU - 3/12/2018 12:22:32 PM - Produced with Core-GS by GeRoc

Scale 1:25

These logs are to be read in conjunction with the full Tonkin & Taylor report

Rev.: A



Tonkin+Taylor

BOREHOLE LOG

INVESTIGATION Id.:
BH05
 SHEET: 2 OF 4

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806946 mN (UTM55H) 323491 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 13/11/2018 FINISH DATE: 13/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL					TESTING							
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES	DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Clayey SAND trace gravel, fine grained, pale grey mottled yellow-brown. Gravel, fine to medium grained, subangular.				5.5				
				Clayey SAND, fine to coarse grained, pale grey mottled brown and yellow-brown.	M	MD		6.0	SPT 4 5 5 N=10			
				7.0m: Predominantly coarse grained sand.		D		7.0				
								7.5	SPT 8 10 25/130mm			
								8.5	8.5-9.0			
				Silty SAND trace gravel, fine grained, yellow-brown mottled pale grey. Gravel, fine to medium grained, subrounded to subangular.		L-MD		9.0	SPT 4 5 9 N=14			
								9.5				

COMMENTS:

Hole Depth
20m



General Log - AU - 3/12/2018 12:22:32 PM - Produced with Core-GS by GeRoc

Scale 1:25

These logs are to be read in conjunction with the full Tonkin & Taylor report

Rev.: A

PROJECT: Balaclava Retail Renewal Precinct		LOCATION: Alfred Street, Balaclava VIC		JOB No.: 1008831.1000.TTAU	
CO-ORDINATES: 5806946 mN (UTM55H) 323491 mE		METHOD: SA		START DATE: 13/11/2018	
R.L.: NA		EQUIPMENT: Comacchio GEO305		FINISH DATE: 13/11/2018	
DATUM: NA		TECHNICIAN: PWIL		LOGGED BY: JSPH	
		CONTRACTOR: Chadwick Geotechnics		CHECKED BY: CHL	

GEOLOGICAL				TESTING					
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONSISTENCY / RELATIVE DENSITY	RL (m) DEPTH (m)	SAMPLES TESTS	SAMPLES DCP Dynamic Cone Penetrometer	ADDITIONAL COMMENTS
WB		Brighton Group		[CONT] Silty SAND trace gravel, fine grained, yellow-brown mottled pale grey. Gravel, fine to medium grained, subrounded to subangular.		10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5	SPT 2 4 6 N=10 SPT 3 5 6 N=11 SPT 4 7 N=11		

COMMENTS:

Hole Depth
20m

BOREHOLE LOG

PROJECT: Balaclava Retail Renewal Precinct	LOCATION: Alfred Street, Balaclava VIC	JOB No.: 1008831.1000.TTAU
CO-ORDINATES: 5806946 mN (UTM55H) 323491 mE	METHOD: SA EQUIPMENT: Comacchio GEO305	START DATE: 13/11/2018 FINISH DATE: 13/11/2018
R.L.: NA DATUM: NA	TECHNICIAN: PWIL CONTRACTOR: Chadwick Geotechnics	LOGGED BY: JSPH CHECKED BY: CHL

GEOLOGICAL					TESTING						
METHOD	WATER	UNIT	GRAPHIC LOG CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE	CONSISTENCY / RELATIVE DENSITY	RL (m)	DEPTH (m)	SAMPLES TESTS	SAMPLES DCP <small>Dynamic Cone Penetrometer</small>	ADDITIONAL COMMENTS
WB		Melbourne Formation	MLCL	Clayey SILT, medium plasticity, pale grey mottled red and yellow-brown. Trace of low to very low strength, dark grey siltstone.	D-M	H			SPT 6 13 25/60mm		15.0 - 20.0m: Inferred extremely weathered to highly weathered Siltstone/ Sandstone
								15.5			
								16.0			
								16.5	SPT 25/110mm		
								17.0			
								17.5			
								18.0			
								18.5			
								19.0			
								19.5	SPT 25/60mm		

COMMENTS: 20m: Target Depth

STANDPIPE RECORD

PIEZO No

BH01

Coordinates:

5806960 mN

323310 mE

Job Name: Balaclava Retail Renewal Precinct

Location: Alfred Street, Balaclava VIC

Job No: 1008831.0000

Drilling Commencement Date: 16/11/2018

Prepared by: OPRI

Installation Completion Date: 16/11/2018

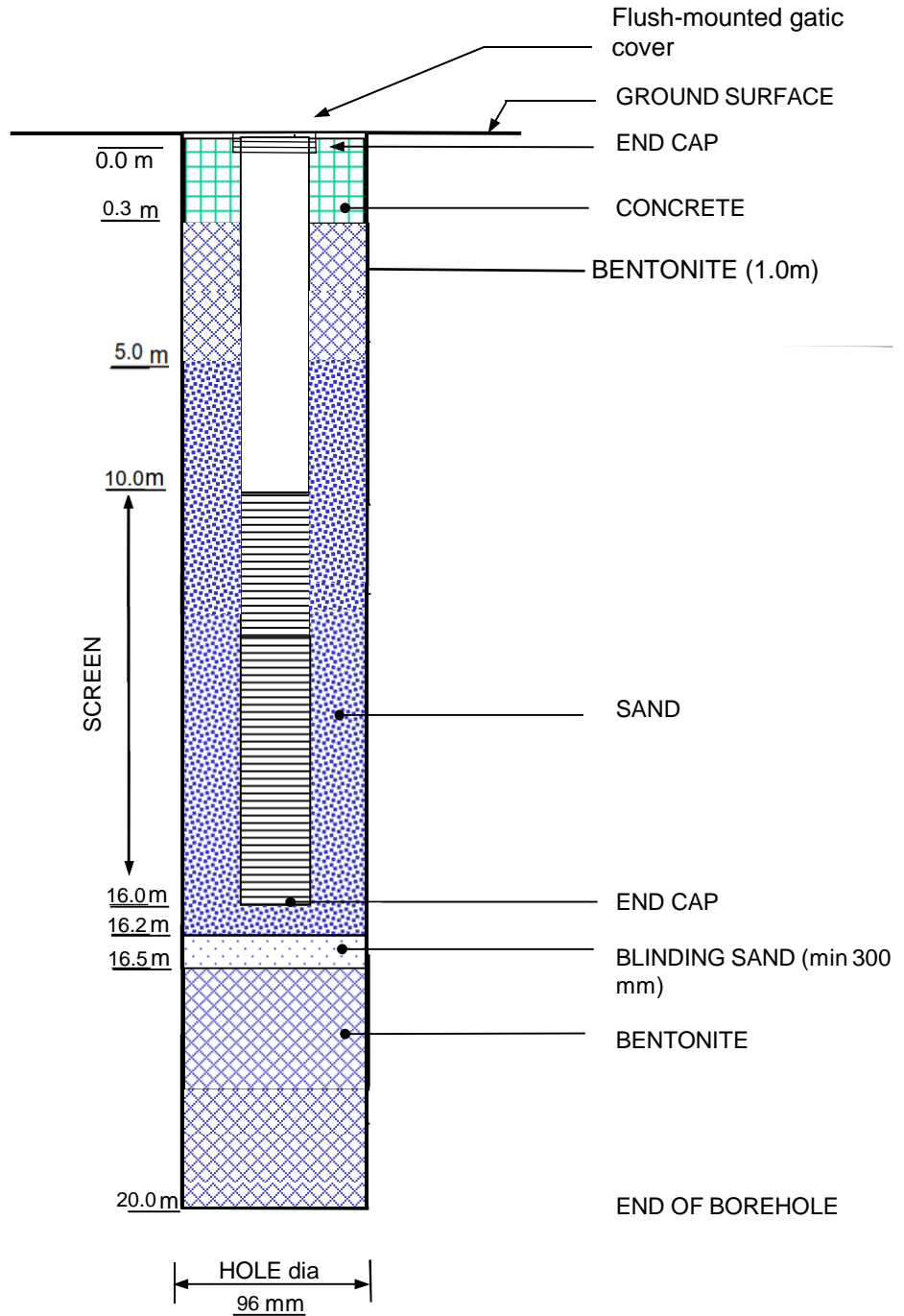


FIGURE B1

STANDPIPE: 50 mm internal diameter PVC

Template
NOT TO SCALE

STANDPIPE RECORD

PIEZO No

BH05

Coordinates: 5806946 mN 323491 mE

Job Name: Balaclava Retail Renewal Precinct Location: Alfred Street, Balaclava VIC

Job No: 1008831.0000 Drilling Commencement Date: 13/11/2018

Prepared by: OPRI Installation Completion Date: 13/11/2018

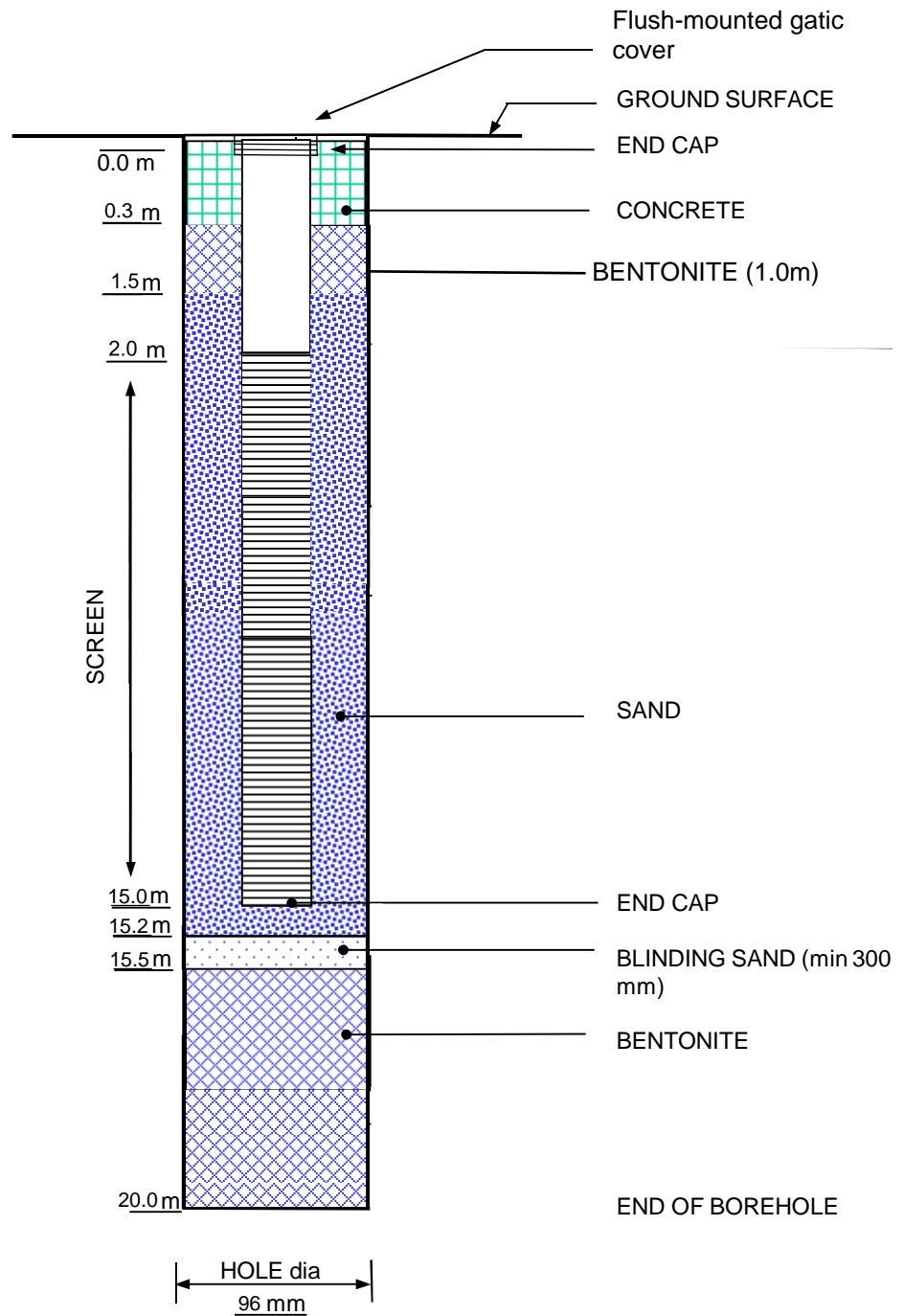


FIGURE B2

STANDPIPE: 50 mm internal diameter PVC

Template
NOT TO SCALE

Appendix C: Laboratory Test Results

Head Office
25 Metcalf Drive
DANDENONG SOUTH VIC 3175

Ph: +61 3 8796 7900
Fax: +61 3 8796 7944



MOISTURE CONTENT REPORT

Customer: Tonkin & Taylor (Aus) Pty Ltd

Customer Address: Ground Floor, 95 Coventry Street, South Melbourne, VIC

Project: Balaclava Retail Renewal Precinct

Location: Alfred Street

Customer Order No.: -

Report Number: **W18DS03470**

Report Date: 30/11/18

Request No: 1008831.100

Test Method: AS 1289 2.1.1

Page: 1 of 1

Testing performed and reported at our Dandenong South Laboratory 12712

Sample No.:	S18DS-13560	S18DS-13562	S18DS-13564	S18DS-13565	S18DS-13566					
ID No.:	-	-	-	-	-					
Lot No.:	-	-	-	-	-					
Date Sampled:	16/11/2018	16/11/2018	16/11/2018	16/11/2018	16/11/2018					
Time Sampled:	-	-	-	-	-					
Date Tested:	26/11/18	26/11/2018	26/11/2018	26/11/2018	26/11/2018					
Material Source:	Insitu	Insitu	Insitu	Insitu	Insitu					
Material Description:	CLAY	Sandy CLAY	Sandy CLAY	Clayey SAND	Sandy CLAY					
To Be Used As:	Material Analysis	Material Analysis	Material Analysis	Material Analysis	Material Analysis					
Sample Location :	BH01 3.0m	BH02 1.5m	BH03 4.0 - 4.5m	BH04 6.0m	BH05 1.0m					
Layer Depth (mm):	-	-	-	-	-					
Test Depth (mm):	-	-	-	-	-					
Sampling Procedure:	Client Sampled	Client Sampled	Client Sampled	Client Sampled	Client Sampled					
Moisture Content (%):	26.7	17.5	18.6	19.6	12.5					

Remarks:



Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

APPROVED SIGNATORY

M Robinson

Form No.: **CG.319.003**

Issue Date: 16/06/2018



Dandenong South
ACN 143 009 330
 25 Metcalf Street
 DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900
 Fax: +61 3 9706 9431

Report No: MAT:S18DS-13563/1

Issue No: 1

Material Test Report

Client: Tonkin & Taylor (Aus) Pty Limited
Address: Ground Floor, 95 Coventry Street
 SOUTH MELBOURNE VIC 3006
Project: Balaclava Retail Renewal Precinct
Project No.: 1008831.1000
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025
 – Testing



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/international standards.

Approved Signatory: M. Robinson
 (Senior Technician)
 Date of Issue: 30/11/2018

12712
 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details

Location Alfred Street
Sample Location BH02, 2.5m
Field Sample ID 4
Date Sampled 19/11/2018
Source In-Situ
Material Sandy Clay
Specification AS Grading
Sampling Method AS1289.1.2.1 Clause 6.4 (b)
Sample ID S18DS-13563

Test Results

Description	Method	Result	Limits
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	11.0	
Mould Length (mm)		250	
Crumbling		No	
Curling		Yes	
Cracking		Yes	
Liquid Limit (%)	AS 1289.3.1.2	40	
Plastic Limit (%)	AS 1289.3.2.1	11	
Plasticity Index (%)	AS 1289.3.3.1	29	

Comments

N/A



Dandenong South
ACN 143 009 330
 25 Metcalf Street
 DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900
 Fax: +61 3 9706 9431

Report No: MAT:S18DS-13561/1

Issue No: 1

Material Test Report

Client: Tonkin & Taylor (Aus) Pty Limited
Address: Ground Floor, 95 Coventry Street
 SOUTH MELBOURNE VIC 3006
Project: Balaclava Retail Renewal Precinct
Project No.: 1008831.1000

Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025
 - Testing



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/International standards.

Approved Signatory: M. Robinson
 (Senior Technician)

12712 Date of Issue: 30/11/2018

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details

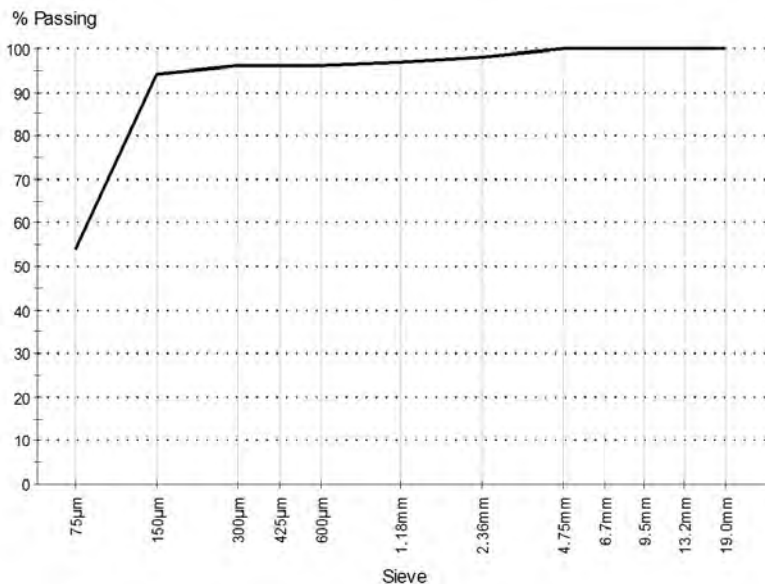
Location: Alfred Street
Sample Location: BH01, 10.5m
Field Sample ID: 2
Date Sampled: 16/11/2018
Source: In-Situ
Material: Silty Sand
Specification: AS Grading
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Sample ID: S18DS-13561

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	18.3	

Particle Size Distribution

AS 1289.3.6.1



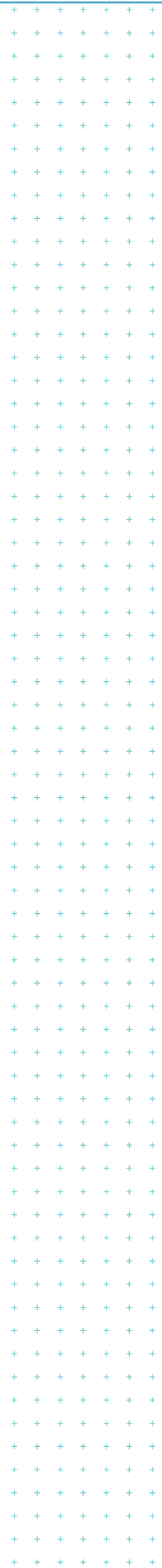
Drying by: Oven
Date Tested: 29/11/2018

Note: Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	100
13.2mm	100	100
9.5mm	100	100
6.7mm	100	100
4.75mm	100	100
2.36mm	98	98
1.18mm	97	97
600µm	96	96
425µm	96	96
300µm	96	96
150µm	94	94
75µm	54	54

Comments

N/A





Appendix H: Council Building Records

CITY OF ST. KILDA

RECORD OF INSPECTIONS

BUILDING REGULATIONS

STREET

ALFRED ST

No.:— *2-18*

LOT:—

Owner

Builder

St Kilda City Council.

Remarks:

Structure		Area	Cost	Permit No.	Date
<i>RELOCATABLE TOILET BLOCK</i>					
Date	Item	Schedule No.	Remarks		
<i>31.3.94</i>	<i>FINAL</i>		<i>Work Completed OK.</i>		

FORM 2

**BUILDING CONTROL ACT 1981
VICTORIA BUILDING REGULATIONS 1983
Regulation 3.2(1)**

SHOW CAUSE NOTICE

Location: 52-54 Alfred Street, St Kilda


Nature of Building Work: Construct toilet block to carpark

Date of Inspection: 9 March 1994

Particulars in respect of which the building work fails to comply with the provisions of these Regulations:

- 1. No building approval has been issued for the proposed works*
- 2. The foundation/footings were not inspected prior to the pouring of concrete as required under regulation 31.4 of the V.B.R's.*

The owner or builder is hereby ordered to show cause by 30 March 1994 why the building should not be brought into conformity with the requirements of the Regulations or be demolished or removed.


R.T. JEFFS
BUILDING SURVEYOR
For and on behalf of
the Council of the
City of St. Kilda

Issued: 16 March 1994

Notices to: Mr Bill Chapman
c/- Building Maintenance Department
1-5 Martin St
ST KILDA 3182

CITY OF ST. KILDA

VICTORIA BUILDING REGULATIONS

BUILDING APPROVAL No. 15572

The Council of the City of St. Kilda hereby approves and authorises:

M JAMES HARDIE MODULAR BUILDINGS

OF: 158-159 CAPITAL LINK DRIVE

CAMPBELL FIELD

TO CONSTRUCT: PUBLIC TOILET

TO: COLES CARPARK

AT: 2-18 ALFRED ST. ST. KILDA

in accordance with the plans, specifications and documents approved herewith and subject to the special conditions (if any) shown hereon.

SPECIAL CONDITIONS:

ESTIMATED COST: \$40,000 -

CLASS: 9b.

N.B. - This is NOT a receipt for any monies paid

	Rec. No.	FEES & DEPOSITS
OWNER: <u>CITY OF ST. KILDA</u>	BUILDING:	\$ <u>286</u>
ADDRESS: <u>BRIGHTON ROAD</u>	DEPOSIT:	\$
<u>ST. KILDA . 3182</u>		\$
	TOTAL:	<u>\$286 -</u>

CONDITIONS UNDER WHICH APPROVAL IS GRANTED

1. That plans and specifications have been approved by the Co-Ordinator, all necessary fees and deposits paid, and that the building will be erected according to all Laws, By-Laws and regulations now in force in this City.
2. No alteration or variation from the approved plans is permitted without the consent in writing of the Council or its Co-Ordinator.
3. The granting of this Building Approval does not absolve the person to whom it is granted from complying with the St. Kilda Planning Scheme controls affecting the land pursuant to the Planning and Environment Act 1987.
4. Every approval issued will, unless extended by the Council, lapse at the expiration of twelve months from the date of issue of such approval if the work for which the approval was granted has not been commenced.
5. Local Law No. 13 only permits construction and works between the hours 7.30am to 6.30pm Monday to Saturday.
NOTE: work is not permitted on Sunday.

DATED the

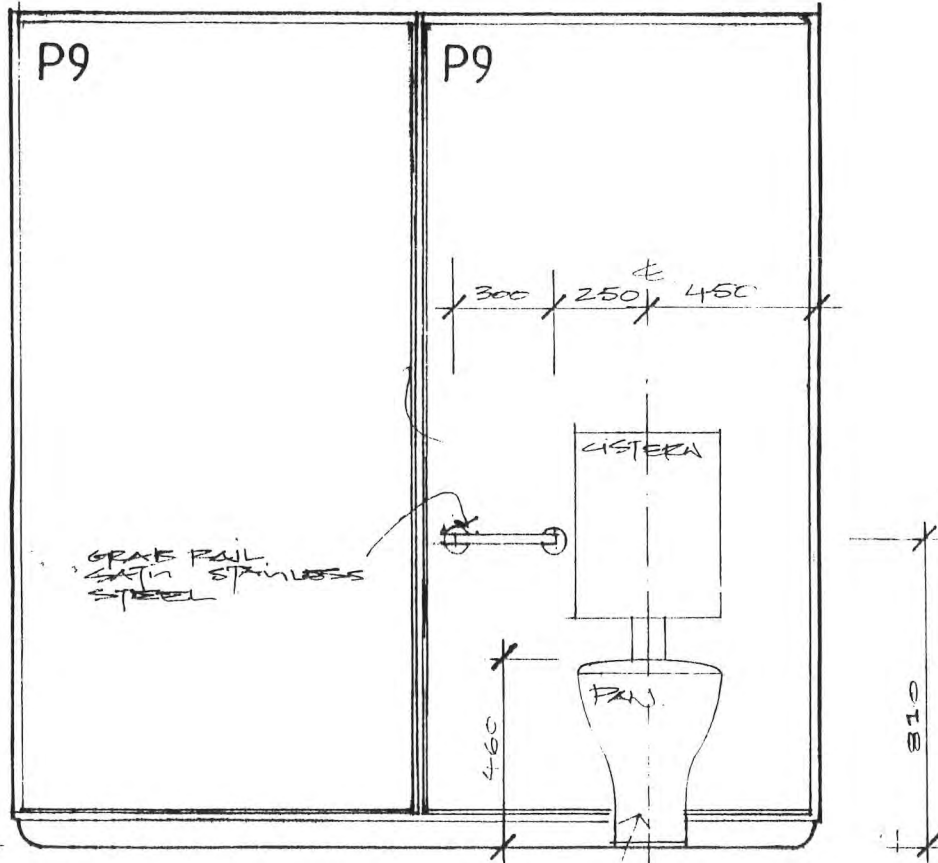
26TH

day of

APRIL

19 94


CO-ORDINATOR



ELEVATION A. SCALE 1:20 DEAFLET FILET SUITE

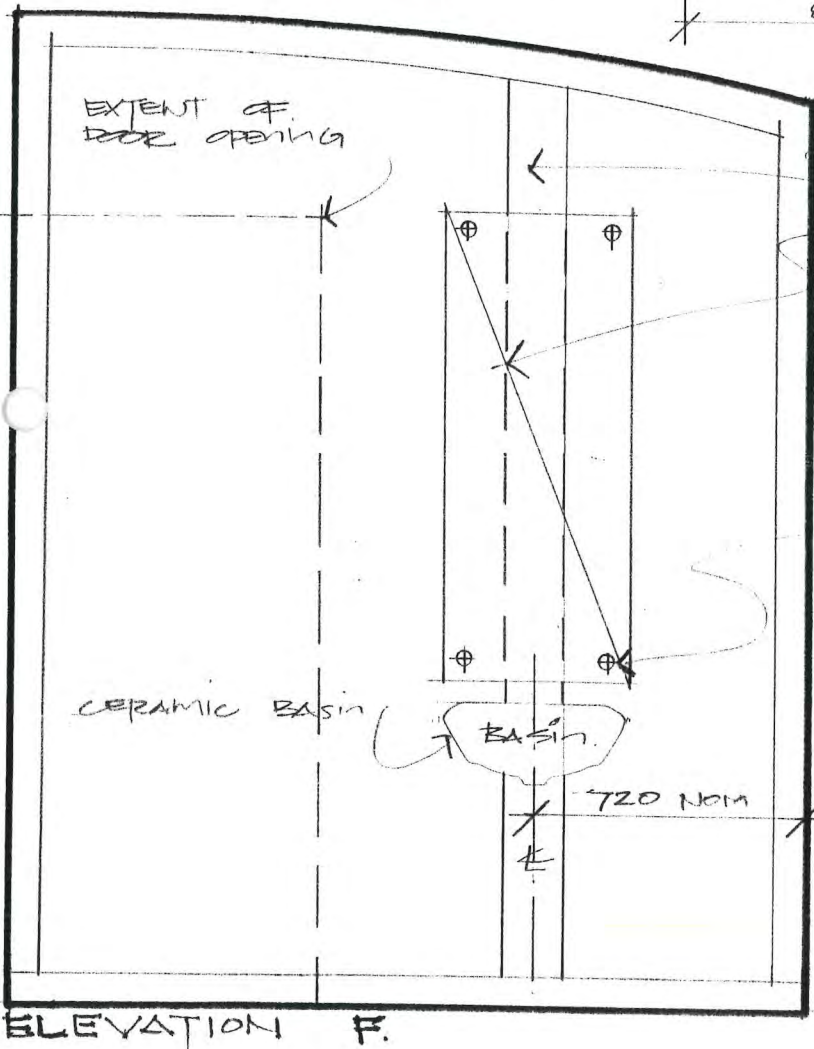
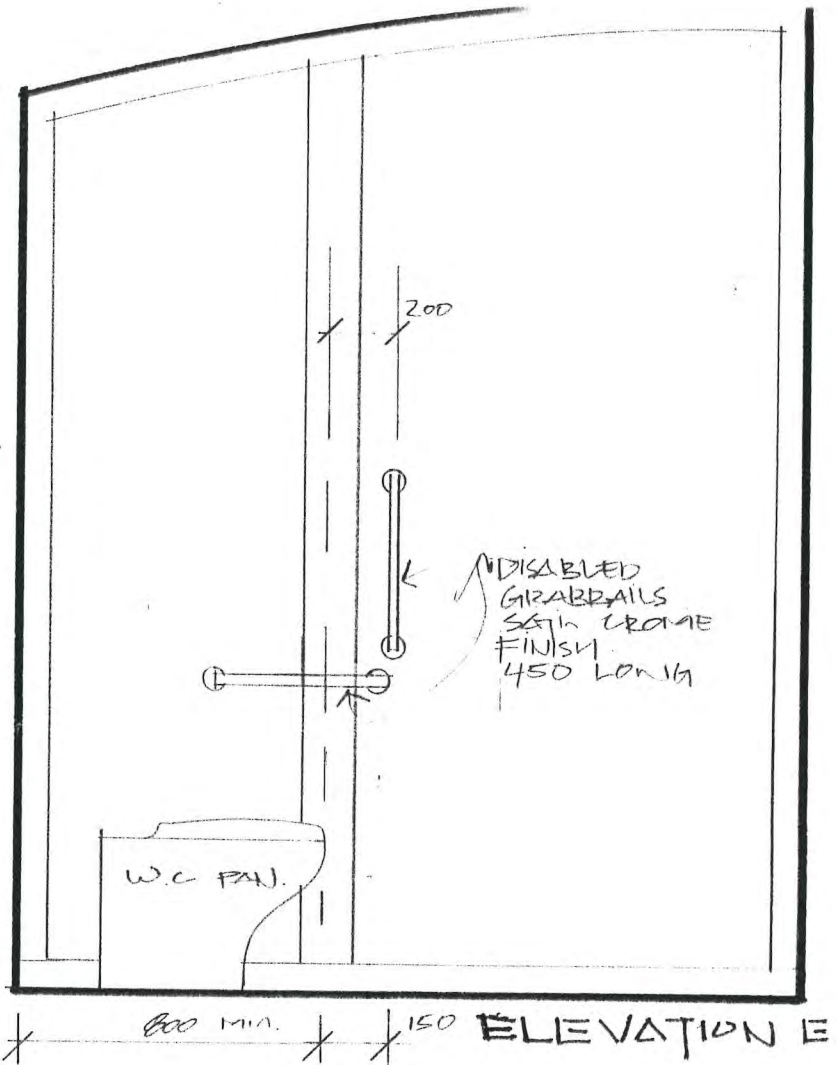
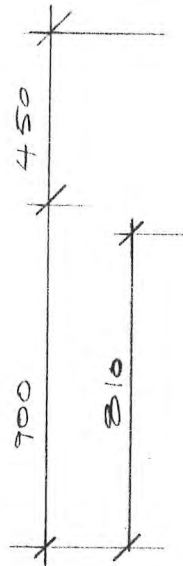
COLES CAR PARK
TOILET BLOCK.
DISABLED TOILET
OCT. 1993 SCALE 1:20.



MILLAR
ROBERTSON
PTY LTD
ARCHITECTS

COLES CARPARK TOILET BLOCK

DISABLED TOILET
OCTOBER 1993
SCALE 1:20



STEEL T SECTION

500x1200 MIRROR

4 No. BUTTON HEAD SCREEN FIXINGS
ALUM KEY ACCESS



GILLAR
ROBERTSON
PTY LTD
ARCHITECTS

ELEVATION F.

APPLICATION FOR BUILDING APPROVAL

TO:
THE DEVELOPMENT APPROVALS CO-ORDINATOR
CITY OF ST. KILDA

I, N. HARNUDOMSKA hereby apply for a building approval for a stage of building work to Construct to Demolish to Remove for a stage of building work to a building on No. Coles Carpark Public Toilet.
NATURE OF CONSTRUCTION: *New Building *Alteration *Addition ~~*Repair~~

Owner of Land { Name.....
Address..... City of St. Kilda
Phone.....

Superintending Architect and/or Engineer { Name..... Mr. John Robertson
Address.....
Phone.....

Builder { Name..... James Hardie Modular Buildings
Address..... T.B.A. - 158-159 Capital Link Drive Campbellfield
Phone..... 357-8199 (Ken Strange)

If purpose is for a Dwelling-house:-
*Builders Registration Number.....
Recognised by
*Housing Builders' Association Ltd.
*Master Builders Housing Fund Ltd.

Attached herewith is Certificate of registration of dwelling house issued under section 918F of the Local Government Act 1958; or
*The owner-builder declaration pursuant to section 23 (4) of the Building Control Act 1981.

PURPOSE for which the building is to be used..... FOR TOILET. (PUBLIC).
Estimated cost of work \$..... 40000-00 or contract price \$.....

I hereby undertake that the *construction, demolition, or removal will be carried out in conformity with the requirements of the Victoria Building Regulations 1983 and the by-laws of the municipality.

Dated this..... 6.9.93 day of.....
Receipt No. \$286 Fees
Signature..... [Signature]
† *Owner
*Agent of Owner

TOTAL _____ Building Approval Number.....
Date Granted.....

*** Strike out words which are inapplicable**
NOTE †A person shall not act as the Agent of an Owner unless authorized in writing by the owner to do so.

CITY OF ST. KILDA

BUILDING CONTROL SECTION

BUILDING APPROVAL APPLICATION CHECKLIST

B.A. No:..... Date Issued: B.A.A. NO: 6655

ADDRESS: 2-18 ANEREA ST, ST. KILDA DATE RECEIVED: 6/9/93

PROPOSED WORKS: TOILET BLOCK TO COLES CARPARK

STAGE 1 - Details to be completed at counter

<u>DOCUMENTS</u>	YES	NO	N/R	COMMENTS
* Building Approval Application Form	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
* Consent For Agent	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Current Certificate of Title	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
* Housing Guarantee Fund Ltd Form 10	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Building Fees	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<u>\$ 286 - (* Bill LUTMAN TO TRANSFER FUNDS INTO BUILDING FEES LEADERS</u>
* Construction Deposits	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Building Specifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* 3 Copies of Architectural Drawings (coloured as appropriate)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
* 2 Copies of Computations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* 2 Copies of Engineers Drawings	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
* Survey Plan of Existing Conditions (prepared by a licensed surveyor)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
* Soil Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Certificate from SECV Re: Substation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Demolition Insurance Liability	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* S.W.D. Details	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

* Other Comments

Awaiting memo re transfer of fee \$286 -

6/11/93

O.K. 26/4/94

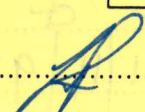
PRELIMINARY ASSESSMENT

LAND	YES	NO	N/R	COMMENTS
* Subject to Flooding	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
- If Yes, MMBW Approval (Flood Level)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Land Subject to Filling	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
- If Yes, Soil Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Protection of Adjoining Properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	?? - Public Protection.
* MFB Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

STAGE 2 - To be completed prior to filing B.A.A. Away

REFERRALS	YES	NO	N/R	COMMENTS
* Town Planning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7/9/93
* Structural Computations Consultant <u>In House</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8/9/93
* Drainage/Location of Crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Traffic Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* City Engineer - to issue Flood Level Notice Reg 44.5(b), BCA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Council (6.6, 56.2, within 2.4m etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Valuation Section (New Class 2&3-5% Resort Contribution)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Health Department	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
* Building Referees	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

CERTIFICATION TO ISSUE BUILDING APPROVAL

STAGE 1 - DOCUMENTS PROVIDED	YES	NO	
	<input type="checkbox"/>	<input type="checkbox"/>	
STAGE 2 - REFERRALS APPROVED	YES	NO	
	<input type="checkbox"/>	<input type="checkbox"/>	
CHECKING OFFICER: <i>Prs. Y.M.</i>			DATE: <i>26/4/94</i>

ROSS - PLEASE GIVE A COST? \$60.

The City of St. Kilda

NO: 6655

DATE: 8/9/93

Building Application Check

Re: Engineering (2)

Location : 2-18 ALFRED ST, ST. KILDA. ^{In House}
~~In House Engineer~~
~~Contract Engineer~~

Proposal : TOILET BLOCK TO COLES CARPARK.

3. Structural Computations

DESIGN LIVE LOADS:

APPROVED BY: Horbee DATE: 8/9/93

COMMENTS:

Subject to footing pads increased to 350 x 350
as discussed with Engineer. (endorsed on SK5)



BILL CHAPMAN & PLOD HAVE BEEN
NOTIFIED ~~2/11/93~~ 16/9/93

11m²
350 D

BS4:3

Brighton Road, St. Kilda 3182.
Private Bag No. 3, PO St. Kilda 3182, DX 32057 Caulfield.
Fax (03) 534 9105, Telephone (03) 536 1333.



CITY OF ST. KILDA
INTER-OFFICE MEMORANDUM

MEMO TO: Lou Pegorin, Assistant Building Surveyor
MEMO FROM: Bill Chapman, Director Building Maintenance
DATE: 22 April 1994
DOC. NO.: BCCP681
FILE NO.:
SUBJECT: ~~5254~~ ²⁻¹⁸ Alfred Street, St. Kilda

In reply to your notice of 9 March 1994, an amount of \$286 was transferred to your ledger no. A 5163.101.7 on 14 October 1993 for building permit fees. What is the delay in the permit being issued? All requested information has been supplied. Should I seek a permit from a private Building Surveying firm? Please advise me.

The foundations/footings were inspected by an officer of the Council who is a qualified building surveyor. Concrete was poured to a depth of 600mm on fine crushed rock being part of the parking pavement.



Bill Chapman
DIRECTOR BUILDING MAINTENANCE

cc: Ron Jeffs, DBC

CITY OF ST. KILDA

INTER-OFFICE MEMORANDUM

MEMO TO: Lou Pegorin, Assistant Building Surveyor
MEMO FROM: Bill Chapman, Director Building Maintenance
DATE: 22 April 1994
DOC. NO.: BCCP681
FILE NO.: 2-18
SUBJECT: ~~52-54~~ Alfred Street, St. Kilda

COPY

In reply to your notice of 9 March 1994, an amount of \$286 was transferred to your ledger no. A 5163.101.7 on 14 October 1993 for building permit fees. What is the delay in the permit being issued? All requested information has been supplied. Should I seek a permit from a private Building Surveying firm? Please advise me.

The foundations/footings were inspected by an officer of the Council who is a qualified building surveyor. Concrete was poured to a depth of 600mm on fine crushed rock being part of the parking pavement.



Bill Chapman
DIRECTOR BUILDING MAINTENANCE

cc: Ron Jeffs, DBC

BUILDING CONTROL ACT

Notice of Refusal is Consent Pursuant to Section 20 (18) of the Act

Ref No _____

Date _____

Applicant N. Harnudomsuk

% City of St. Kilda

Address Private Bag No 3

P.O. St. Kilda 3182

Dear Sir/Madam

BUILDING APPROVAL APPLICATION No 6655

ADDRESS OF PROPERTY 2-18 Alfred St, St. Kilda.

1. Nominate the builder.
2. Denote of the site plan the location of stormwater drainage to the legal point.
3. Provide elevations of disabled toilet indicating grabrails
4. Indicate on plan the setbacks of the toilet pan, grabrails ~~et~~ etc. from walls, and also include a hand basin in the disable toilet area.
5. Refer to AS 1428.1-1988 as denoted in SK5
5. Pad footings are to be increased to 350 x 350.

Note: A memo ~~is~~ indicating the transfer of \$286 ^{for the Building Fee} is to be provided.

Officer: Ms Y Morris - Tel: 536 1361
1-5 Martin Street, St Kilda 3182
Counter Enquiries: 9.00 am - 11.30 am
4.30 pm - 6.00 pm Wed. only

Doc Ref: YM18AL

14 October 1993

Mr N Harnudomsuk
C/- City of St Kilda
Private Bag No 3
ST. KILDA 3182

Dear Sir

RE: BUILDING APPROVAL APPLICATION NO. 665
ADDRESS OF PROPERTY: 2-18 ALFRED STREET, ST. KILDA

I refer to the above application and advise that consent has been refused by Council's Building Surveyor in accordance with Section 20(18) of the Building Control Act 1981.

The application has been refused because the items listed in the schedule detailed below are either outstanding or do not comply with the requirements of the Victoria Building Regulations and/or other relevant Acts and Regulations.

Schedule

- ~~1.~~ Nominate the builder.
- ~~2.~~ Denote on the site plan the location of stormwater drainage to the legal point.
- ~~3.~~ Provide elevations of disabled toilet indicating grabrails.
- ~~4.~~ Indicate on plan the setbacks of the toilet pan, grabrails etc from walls and also include a hand basin in the disabled toilet area.
- ~~5.~~ Pad footings as denoted in SK5 are to be increased to 350 x 350.

Note: A memo indicating the transfer of \$286.00 for the Building Fee is to be provided.

PED was
advised 1/11/93
that the
only outstanding
item is the
payment of
\$286 -
(by memo)

Yvonne
1/11/93
o.k. *ff* 26/4/94

However, the provisions of Regulation 8.11 of the Victoria Building Regulations 1983, will enable your current application to be approved provided that the items listed in the Schedule are rectified to the satisfaction of Council's Building Surveyor, with the necessary information having been provided to the Development Approvals Co-Ordinator within six months of the date of this letter.

Obviously, failure to supply the necessary information within the allowed six month period will result in this current application lapsing and the need for a new application for Building Approval to be lodged with the appropriate fee.

Please do not hesitate to contact the Council officer whose name appears at the top of this letter to clarify any matters in relation to your Building Approval application.

Yours faithfully,



P G Watt
DEVELOPMENT APPROVALS CO-ORDINATOR



Y MORRIS
29 OCT 1993

26 October 1993

Ms Yvonne Morris
Building Control Section
St. Kilda Council
Private Bag No. 3
P.O. St. Kilda 3182

024/002 P1-A
1587
6407
00
900

MILLAR
ROBERTSON
PTY. LTD.
ARCHITECTS

Dear Yvonne

**RE : BUILDING APPROVAL APPLICATION NO. 6655
2-18 ALFRED STREET, ST. KILDA.**

In response to your letter dated 14 October 1993 we provide the following information.

1. The builder is James Hardie Modular Buildings
158-159 Capital Link Drive
Campbellfield Vic 3061.

Contact: Mr Ken Strange 357 8199.
2. The stormwater is not proposed to be collected by a conventional gutter and downpipe, but rather to run off the roof sheet and fall onto the car park pavement. From this point it will flow in to the car park stormwater drainage system.

The reason for no gutter and downpipe is that in a car park environment it will be too susceptible to damage.
3. Details of the disabled grab rails are provided on the two attached sketches. (3 copies.)

4. Details of the toilet pan, and basin etc. to the disabled toilet are provided on the sketches referred to in item 3.
5. The pad footings as denoted on SK5 will be increased to 350 x 350.

We trust this resolves the outstanding issues on the building permit application.

Yours faithfully
MILLAR ROBERTSON PTY. LTD.



John Robertson

Att.

CITY OF ST. KILDA
UNIFORM BUILDING REGULATIONS

THIRD SCHEDULE
APPLICATION FOR PERMIT

To the Building Surveyor,
City of St. Kilda.

I hereby apply for a permit to ~~Demolish~~ ^{*Construct} a building on ~~Remove~~

*Allotment No. 2 in Alfred Street
Street
Nature of Construction:—*New building, alteration, addition, repair.

Owner of Land { Name City of St Kilda
Address Spurn Hall
St Kilda

Superintending Architect and/or Engineer { Name
Address

Builder { Name Ed Marshall Demolition
Address 63 Colchester St
Camberwell

Purpose for which building is to be used Demolition
Estimated Cost of Work \$650

I undertake that the *construction, demolition, or removal will be carried out in conformity with the requirements of the Local Government Act (as amended), Uniform Building Regulations and of the by-laws of the municipality.

DATED this Twenty nine day of May 1974
Signature Ed Marshall *Builder
Owner
Architect

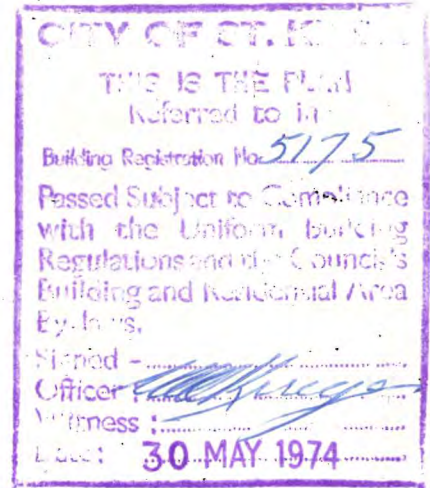
Fee..... Permit — Number.....

Date Issued.....

* Strike out words which are inapplicable.

NOTE If this application be not signed by the Owner, then a written consent of the Owner of the land to the lodging of this application must be produced.

CITY OF ST. KILDA
SCAFFOLDING REGULATIONS
FOURTH SCHEDULE
APPLICATION FOR PERMIT



To the Surveyor, City of St. Kilda (x) erect

I hereby apply for a permit to use erect and use

(x) allotment scaffolding on street No Two in Alfred Street
Cost of project (See clause 402) \$ 650
Dated this Twenty nine day of May 19 74 ..

Signature [Signature]
For and on behalf of [Signature]
(Company, firm or principal)

Postal Address 63 Esthelstan Rd Camberwell
(Company, firm or principal) Phone No 292781 ..

The following information is requested to facilitate inspection and is in no way binding on the applicant.
Purpose for which scaffolding is to be used Demolition ..

(x) Type of scaffolding proposed to use:- (x) Single pole scaffolding, independent pole scaffolding, suspended scaffolding, boatswain's chair, cantilever scaffolding, trestle scaffolding, hanging (on hook rods) scaffolding.

Estimated date of erection 29 / 5 / 1974 ..

Is it intended to use a crane or hoist in close proximity to the scaffolding to which the application relates? (x) ~~Yes~~
No

For office use only:

Fee Permit Number Date Issued
(x) Strike out words which are inapplicable.

CITY OF ST. KILDA

UNIFORM BUILDING REGULATIONS OF VICTORIA

BUILDING PERMIT

No. 6844

The Council of the City of St. Kilda hereby permits and authorises

M. N. D. MARSHALL DEMOLITION
of 63 ATHELSTAN RD.
CAMBERWELL

to construct

to DEMOLISH BUILDING
at 39 CAMDEN ST.

in accordance with the plans, specifications and documents approved herewith and subject to the special conditions (if any) shown hereon.

Special Conditions:

Estimated cost \$ 800 Class

Area Type of construction

N.B.—This is NOT a receipt for any monies paid.

FEES & DEPOSITS

Owner: <u>CITY OF ST. KILDA</u>	Building	\$ <u>10</u>
Address: <u>ORCHARD RD.</u>	Sanitary	\$
<u>ST. KILDA</u>	Deposit	\$

AMOUNT PAID AS PER RECEIPT NO.: 8226 TOTAL: \$ 10

CONDITIONS UNDER WHICH PERMIT IS GRANTED

1. That plans and specifications have been approved by the Building Surveyor, all necessary fees and deposits paid, and that the building will be erected according to all Laws, By-Laws and regulations now in force in this City.
2. No alteration or variation from the stamped plans is permitted without the consent in writing of the Council or its Building Surveyor.
3. The granting of this Building Permit does not absolve the person to whom it is granted from complying with any Planning Scheme Ordinance or Interim Development Order affecting the land and made under the Town and Country Planning Act.
4. Every permit issued will, unless extended by the Council, lapse at the expiration of twelve months from the date of issue of such permit if the work for which the permit was granted has not been commenced.

DATED the 9TH day of MARCH 19 78

File Copy

[Signature]
PROPER OFFICER/BUILDING SURVEYOR

CITY OF ST. KILDA

UNIFORM BUILDING REGULATIONS

THIRD SCHEDULE

APPLICATION FOR PERMIT

To the Building Surveyor,
City of St. Kilda.

I hereby apply for a permit to Construct
 Demolish a building on
 Remove

*Allotment No. 39 in Camden Street.....
Street Nature of Construction:—*New building, alteration, addition, repair.

Builder { Name N. Marshall Demolition
Address 63 Esplanade
Camdenwell Phone 292781

Superintending Architect and/or Engineer { Name.....
Address.....
Phone.....

Owner of Land { Name City of St Kilda
Address Town Hall
St Kilda Phone.....

Purpose for which building is to be used Demolition

Estimated Cost of Work \$800

I undertake that the *construction, demolition, or removal will be carried out in conformity with the requirements of the Local Government Act (as amended), Uniform Building Regulations and of the by-laws of the municipality.

DATED this nine day of March 1978

Signature N Marshall *Builder
Owner
Architect

Fee \$10 Permit — Number 6844
R/C. 8226

Date Issued 9-3-78

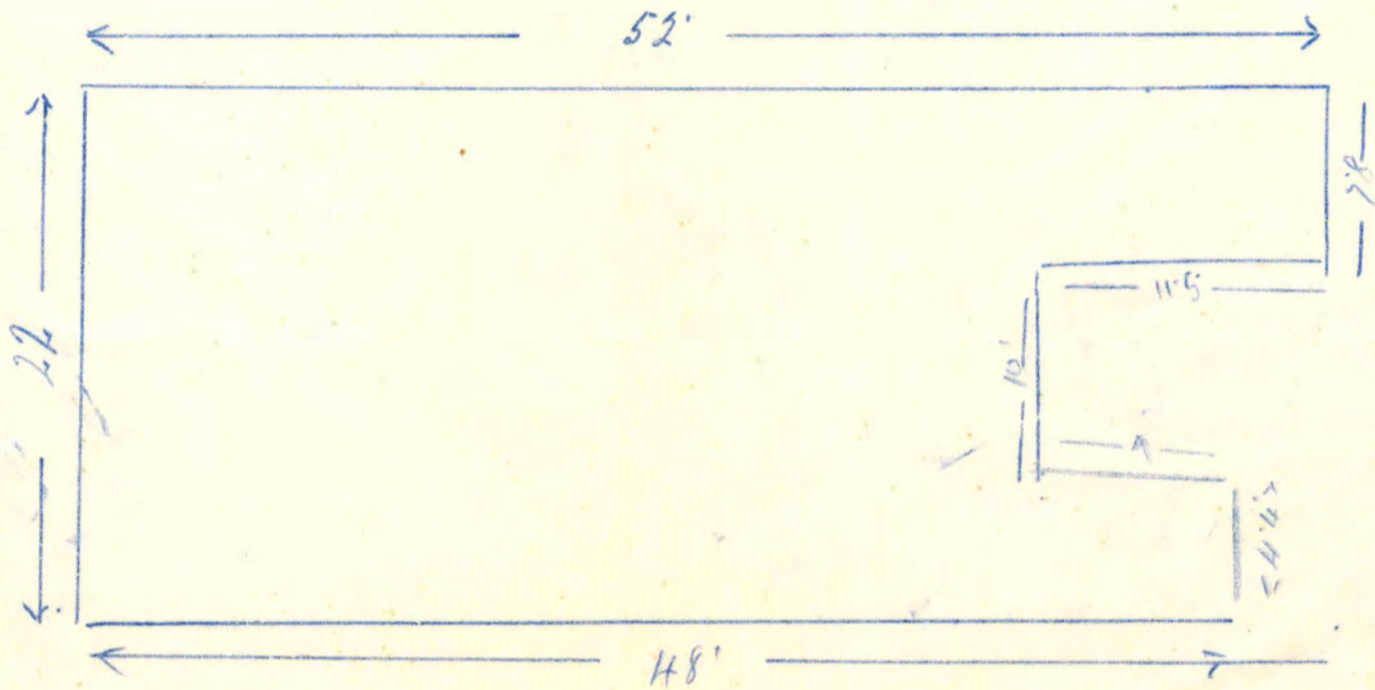
* Strike out words which are inapplicable.

NOTE If this application be not signed by the Owner, then a written consent of the Owner of the land to the lodging of this application must be produced.

Plans & Specifications
H. J. Nelson &
Balclutha

Owned by
Mrs E. Wells

- 12 x 6 x 1 1/2 R.C. SOLES
- 4 x 4 R.C.
- 4 x 3 H. IV. BEARERS
- 4 x 2 " " JOISTS
- 6 x 1 " " PLYNTH.



H. J. Nelson

1257

CITY OF ST. KILDA

PERMIT

N^o 2463

Building Surveyor's Office,
Town Hall, St. Kilda.

Permit No. U2517 DATE OF ISSUE 28/11 1955

To Bamber & Foxman
of 7 Beate St Brighton

On behalf of the Council of the City of St. Kilda authority is hereby granted for the
construction ^{alterations to} pulling down of a building on Allotment No. 49 in Yelken Street
removal Street

in accordance with the Application for Permit and plans and specifications submitted to the Council
and dated the 17/11 1955

This permit shall lapse at the expiration of twelve months from date of issue of same.

Countersigned by B. H. Watson R. J. Greaves
Town Clerk.



Appendix I: Fieldwork Methodology



Appendix I: Fieldwork Methodology

The table below describes the methodology utilised during the intrusive investigations.

Activity	Item	Description
Underground Service Clearance	Date	22 November 2018
	Subcontractor	Underground Services Detection
	Method	<p>Prior to intrusive site works, proposed investigation locations were cleared for the presence of underground services via the following methodology:</p> <ul style="list-style-type: none"> • Review of available service and sewerage plans from the dial-before-you-dig online database. • Inspection of the site and immediate off-site areas for surface evidence and signage indicating utility locations and to confirm the presence and alignment of nearby and on-site sewerage infrastructure and underground services. • Tracing of known and redundant (where possible) underground utilities by an experienced underground utility locator using radio detection equipment. Senversa supervised this activity and discussed the findings with the locator personnel. • Completion of Senversa's Borehole / Excavation Underground and Overhead Clearance Protocol prior to intrusive investigation.
Soil Investigation	Date	23 November 2018
	Subcontractor	Horizon Drilling
	Method	<ul style="list-style-type: none"> • 8 soil bore locations were advanced to a depth of 1.5 metres using push tube techniques. • All samples were screened for volatile organic compounds (VOCs) using a photo-ionisation detector (PID). Calibration certificates are presented in Appendix M. • All eight locations were reinstated with excavated material and cold mix asphalt at surface. • Disposable gloves were used and replaced between sampling locations to avoid cross contamination. Equipment was cleaned prior to sampling each soil bore location using a Decon 90 solution followed by a clean water rinse. <p>Soil samples were collected from distinct lithological horizons and where there was evidence of contamination. The stratigraphy encountered at each location and the depth of contamination samples collected are detailed within Appendix L.</p>
Groundwater Monitoring	Date	23 November 2018
	Standing Water Level Measurement	<p>The two groundwater wells onsite were gauged using a calibrated oil/water interface meter.</p> <p>Groundwater levels were measured relative to the top of the PVC casing (m bTOC) from marks indicating the point surveyed. The interface meter was decontaminated before and after each measurement with a Decon90 water solution, then rinsed with clean water.</p> <p>Results were recorded to the nearest 0.001 m with an accuracy approximately +/- 0.002 m. Gauging results are presented on sampling field sheets included in Appendix M.</p>
	Groundwater Sampling	<p>Both wells were sampled using low-flow techniques (micropurge) using a submersible bladder pump. Wells were sampled when at least five equipment volumes had been purged and field parameters were observed to have stabilised.</p> <p>The groundwater sampling records are included within Appendix M.</p>



Activity	Item	Description
	Field Parameter Measurement	Field groundwater quality parameters were measured during sampling using a water quality meter. The parameters included pH, electrical conductivity (EC), dissolved oxygen (DO), oxidation reduction potential and temperature. Sampling is conducted once water quality parameters stabilise in accordance with <i>EPA Publication 669 – Groundwater Sampling Guidelines</i> , (EPA, 2000). Measured field water quality parameters are presented within sampling sheets in Appendix M .
	Field Filtering	Groundwater samples that were analysed for dissolved metals were field filtered with 0.45 micron filters.
Soil Classification and Logging	Method	Lithological conditions were logged using a modified methodology based on the Unified Soil Classification System. Soil classification is based on field observations and only intended to provide a general indication of site soil characteristics encountered. The classifications should not be relied upon for geotechnical purposes and have not been confirmed by geotechnical testing or particle size distributions. The stratigraphy encountered in each soil bore is detailed on the bore logs within Appendix L . Relevant site photographs showing the typical lithology encountered are included in Appendix B .
Waste Disposal	Procedure	Reinstatement of all soil investigation bores was undertaken using excess spoil generated during the soil investigation. Wastewater from groundwater sampling was collected in a portable 20 L container for subsequent disposal offsite.
Avoidance of Cross Contamination	Procedure	Sampling procedures used to prevent cross contamination involved: <ul style="list-style-type: none"> The use of new dedicated disposable gloves, pump bladders, field filters, low-density polyethylene tubing and disposable push tub in-liners at each sample location. Decontamination of all non-disposable sampling equipment was undertaken using a water and Decon 90 solution. A separate vessel of clean water was used for a final rinse.
Sampling Handling and Preservation	Procedure	Soil and groundwater samples were collected immediately and placed into laboratory-supplied jars/bottles containing appropriate preservatives for the selected analytical testing and stored in a cooler box with ice prior to and during transit to the laboratory. Samples were transported to the laboratory with an accompanying chain of custody (COC) documentation and laboratory provided security seals. Details of the sample transportation and handling can be found on the COC and Sample Receipt Notification documentation provided with Appendix N .
Equipment Calibration	Procedure	Equipment requiring calibration (PID, oil/water interface meter and groundwater quality meter) for environmental assessment purposes were calibrated by the supplier prior to use. Relevant calibration certificates have been provided in Appendix M .
VOC Field Measurements	Method	During the soil sampling works, a calibrated photo-ionisation detector (PID) was used to collect semi-quantitative VOC field measurements from targeted soil location samples. A sub-sample of soil was placed in a snap-lock bag which was sealed and left for a minimum of 3 minutes, prior to measurements being taken. The PID readings were taken from the head space of the bags containing the soil samples. The PID measurements are included on the borelogs within Appendix L .



Appendix J: Quality Assurance/ Quality Control

Appendix J: Quality Assurance/Quality Control

The data quality assurance and control (QA/QC) procedures adopted by Senversa provide a consistent approach to evaluation of whether the data quality objectives (DQO's) required by the project have been achieved. The process focuses on assessment of the useability of the data in terms of accuracy and reliability in forming conclusions on the condition of the element of the environment being investigated. The approach is generally based on guidance from the following sources:

- Australian Standard (AS) 4482.1-2005: *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds.*
- National Environment Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1 2013 (NEPM), Schedule B2: Guideline on Site Characterisation.*
- NEPC – *National Environment Protection (Assessment of Site Contamination) Amendment Measure No. 1 2013 (NEPM), Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils.*
- United States Environmental Protection Agency (USEPA) – *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4).*
- USEPA – *Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).*

Quality Assurance Procedure

The following data quality objectives, measures and acceptance criteria were adopted to verify compliance with the planned QA procedures:

Quality Assurance Process	Data Quality Element	Objectives and Measure	Acceptance Criteria
Standard Procedures	Comparability, Reproducibility, Representativeness	Standard field sampling procedures and forms used	No deviation from standard procedure and forms used
Equipment Calibration	Accuracy	All equipment calibrated in accordance with manufacturers specifications	All equipment calibrated in accordance with manufacturers specifications
Testing Method Accreditation	Accuracy and Comparability	NATA accredited methods used for all analyses determined	Primary and secondary laboratories to use NATA accredited methods for all analytes determined
Quality Control Sampling Frequency	Precision and Repeatability	Field QC sampling frequency in accordance with AS4482.1-2005	Field Duplicates – ≥ 1 in 20 primary samples Secondary Duplicates – ≥ 1 in 20 primary samples Rinsate Blanks – ≥ 1 per day, per matrix per equipment Trip Blanks – ≥ 1 per esky containing samples for volatile analyses

Quality Assurance Process	Data Quality Element	Objectives and Measure	Acceptance Criteria
	Accuracy, Precision and Comparability	Laboratory QC analysis frequency in accordance with NEPC (2013), Schedule B3	Laboratory Duplicates – at least 1 in 10 analyses or one per process batch Method Blanks – at least 1 per process batch Surrogate Recoveries – all samples spiked where appropriate (e.g. chromatographic analysis of organics) Laboratory Control Samples – at least 1 per process batch Matrix Spikes – at least 1 per matrix type per process batch
Sample Preservation, Handling and Holding Times	Accuracy	Samples appropriately preserved upon collection, stored and transported, and analysed within holding times	Sample containers, holding times and preservation in accordance laboratory specific method requirements.
Data Management	Accuracy	No errors in data transcription	Entry of field data verified by peer.
Data Useability	Completeness	Limits of reporting less than adopted beneficial use investigation levels. Sample volumes and analytical methods selected to enable required limits of reporting to be achieved	Limits of reporting less than investigation levels.

Quality Control Sampling and Analysis

The following data quality objectives, measures and acceptance criteria were adopted to evaluate the validity of the analytical data produced.

Quality Control Process	Data Quality Element	Objectives and Measure	Acceptance Criteria
Field Duplicate Sampling and Analysis	Precision and Field Repeatability	Field duplicate samples used assess the variability in analyte concentration between samples collected from the sample location and the reproducibility of the laboratory analysis. Where required, resubmission of previously analysed samples for chemicals within their holding times may be undertaken to further assess level of precision.	Analysed for same chemicals as primary sample RPD ¹ <30% of mean concentration where both concentrations >20 x limit of reporting RPD <50% of mean concentration where higher concentration 10 – 20 x limit of reporting RPD - No limit where both concentrations < 10 x limit of reporting

¹ Relative Percent Difference (%): Calculated as: (Result No.1 – Result No. 2/Mean Result)*100

Quality Control Process	Data Quality Element	Objectives and Measure	Acceptance Criteria
Secondary Duplicate Sampling and Analysis	Accuracy	Results are accurate and free from laboratory error. Secondary duplicate samples sent to a secondary laboratory to assess the accuracy of the analyte concentrations reported by the primary laboratory	<p>Analysed for same chemicals as primary sample</p> <p>RPD <30% of mean concentration where both concentrations >20 x limit of reporting</p> <p>RPD <50% of mean concentration where higher concentration 10 – 20 x limit of reporting</p> <p>RPD - No limit where both concentrations < 10 x limit of reporting</p>
Field Rinsate Blank Preparation and Analysis	Accuracy and Representativeness	<p>Cross contamination of samples does not occur between sampling locations due to carry-over from sampling equipment.</p> <p>Rinsate blank samples prepared for each sampling procedure. Where possible the rinsate blanks are prepared immediately after sampling locations known to contain concentrations of the chemicals of concern above the limit of quantification and / or before sampling locations where the chemicals being targeted in the laboratory analysis are to be compared to investigation levels near the limit of quantification of the chemical.</p>	Analyte concentrations below limits of reporting
Trip Blank Sampling and Analysis	Accuracy and Representativeness	<p>Cross contamination between samples does not occur in transit or as an artefact of the sample handling procedure.</p> <p>Trip blank samples prepared by the laboratory which accompany the empty sampling containers from the laboratory to the sampling site and return with the samples to the laboratory to assess whether cross contamination occurs between samples or as an artefact of the sampling procedure.</p>	Analyte concentrations below limits of reporting
Laboratory QC Analysis	Laboratory Precision and Accuracy	Laboratory duplicates	As specified by the laboratory.
		Laboratory control spike	Dynamic recovery limits as specified by the laboratory.
		Certified reference material	As specified by the laboratory (generally dynamic recovery limits).
		Surrogate recovery	Dynamic recovery limits as specified by the laboratory.
		Matrix spike recovery	Recovery 70% – 130% or dynamic recovery limits specified by laboratory. However, note that recovery of phenols is generally significantly lower and a recovery in the range 20% to 130% is considered acceptable by most laboratories.
		Matrix spike recovery duplicate	RPD < 30%, or as specified by the laboratory.

Data Verification and Validation

The data validation process involved the checking of analytical procedure compliance with acceptance criteria and an assessment of the accuracy and precision of analytical data from the range of quality control indicators generated from both the sampling and analytical programmes.

The checks undertaken are summarised in the attached data validation checklist tables (one table per sample batch/delivery group). Field replicate and field blank analytical results relevant to the project are summarised in **Table J-1 to J-3**.

Instances where the data quality acceptance criteria were not achieved are discussed below:

Frequency of Field Duplicates

No field duplicates were collected during the first round of soil sampling undertaken at the site by City of Port Phillip. Overall the results obtained by primary analyses are consistent and there is the field sampling methods are considered to have been adequate.

Field Blanks

No rinsate or trip blanks have been analysed. This is not considered to present an issue as dedicated equipment was used or equipment was decontaminated between locations. There is no evidence to suggest cross-contamination between locations and no volatile compounds present likely to have caused cross-contamination between samples.

Sample Holding Times

Nitrate analysis undertaken by on the interlaboratory groundwater sample was out of holding time. Results are comparable to those obtained by the primary laboratory and are therefore not considered to have been compromised.

Laboratory Quality Control Sampling Frequency

Laboratory quality control frequency outliers are limited to semi-volatile organic compound laboratory duplicates and matrix spikes during analysis of the interlaboratory groundwater sample. Frequencies during all primary analyses met the acceptance limits.

Laboratory Quality Control Duplicate RPDs

The RPD calculated for one laboratory duplicate analysis for chromium in soil exceeded acceptance limits. All other RPDs calculated for contaminants of potential concern were within acceptance limits.

Spike Recoveries

The matrix spike recovery for zinc during both primary and secondary soil analyses was below acceptance limits due to background interference. Matrix spike recovery for acenaphthene, and laboratory control spike for recovery for fluorene, were greater than upper control limits during analysis of the first round of soil samples. Matrix spike recovery for dissolved mercury was below acceptance limits during secondary water analyses. Results for all other recoveries were within acceptable limits.

Field Duplicate RPDs

Isolated RPDs were calculated to be outside of Senversa's adopted acceptance criteria for sample analysis reproducibility. It is considered that these non-conformances were likely due to the heterogeneous nature of the soil matrix and the natural variation inherent in field and laboratory methodologies.

Data Suitability

While a small number of QC results were outside specified acceptance criteria, these were not considered to significantly impact on the quality or representativeness of the data, and majority of results indicated that the precision and accuracy of the data was within acceptable limits. The results are therefore considered to be representative of chemical concentrations in the environmental media sampled at the time of sampling, and to be suitable to be used for their intended purpose in forming conclusions relating to the contamination status of soil and groundwater at the site.

		Location Code	SB08	SB08		SB08	SB08	
		Field ID	SB08_0.4-0.6	QA1		SB08_0.4-0.6	QA2	
		Date	23/11/2018	23/11/2018		23/11/2018	23/11/2018	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
		Lab Report No.	629544	629544	RPD	629544	EM1818997	RPD
	Unit	EQL						
Physical Parameters								
Moisture Content	%	1	2.5	1.8	33	2.5	5.5	75
Metals								
Arsenic	mg/kg	2	25	<2	170	25	<5	133
Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<1	0
Chromium	mg/kg	2	7.8	<5	44	7.8	10	25
Copper	mg/kg	5	<5	<5	0	<5	<5	0
Lead	mg/kg	5	10	12	18	10	27	92
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
Molybdenum	mg/kg	2	<5	<5	0	<5	<2	0
Nickel	mg/kg	2	<5	<5	0	<5	3	0
Selenium	mg/kg	2	<2	<2	0	<2	<5	0
Silver	mg/kg	0.2	<0.2	<0.2	0	<0.2	<2	0
Tin	mg/kg	5	<10	<10	0	<10	<5	0
Zinc	mg/kg	5	42	37	13	42	81	63
Total Petroleum Hydrocarbons								
C6-C9 Fraction	mg/kg	10	<20	<20	0	<20	<10	0
C10-C14 Fraction	mg/kg	20	<20	<20	0	<20	<50	0
C15-C28 Fraction	mg/kg	50	<50	<50	0	<50	<100	0
C29-C36 Fraction	mg/kg	50	<50	<50	0	<50	<100	0
C10-C36 Fraction (Sum)	mg/kg	50	<50	<50	0	<50	<50	0
Total Recoverable Hydrocarbons								
C6-C10 Fraction	mg/kg	10	<20	<20	0	<20	<10	0
C6-C10 Fraction minus BTEX (F1)	mg/kg	10	<20	<20	0	<20	<10	0
>C10-C16 Fraction	mg/kg	50	<50	<50	0	<50	<50	0
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50	<50	<50	0	<50	<50	0
>C16-C34 Fraction	mg/kg	100	<100	<100	0	<100	<100	0
>C34-C40 Fraction	mg/kg	100	<100	<100	0	<100	<100	0
>C10-C40 Fraction (Sum)	mg/kg	50	<100	<100	0	<100	<50	0
PAHs								
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Sum of Polycyclic aromatic hydrocarbons (PAH)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

		Location Code	MW02	MW02		MW02	MW02	
		Field ID	MW02	QA1		MW02	QA2	
		Date	22/11/2018	22/11/2018	RPD	22/11/2018	22/11/2018	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
		Lab Report No.	629482	629482		629482	EM1818991	RPD
	Unit	EQL						
Physical Parameters								
Total Dissolved Solids	mg/L	10	680	640	6	680	712	5
Inorganics								
Ammonia (as N)	mg/L	0.01	0.02	<0.01	67	0.02	0.07	111
Nitrate (as N)	mg/L	0.01	3.4	3.5	3	3.4	3.59	5
Metals								
Arsenic (filtered)	mg/L	0.001	0.001	0.001	0	0.001	0.001	0
Beryllium (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Boron (filtered)	mg/L	0.05	0.13	0.12	8	0.13	0.11	17
Cadmium (filtered)	mg/L	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0
Chromium(VI)	mg/L	0.001	<0.001	<0.001	0	<0.001	-	-
Cobalt (filtered)	mg/L	0.001	0.002	0.002	0	0.002	0.002	0
Copper (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Lead (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Manganese (filtered)	mg/L	0.001	0.090	0.084	7	0.090	0.088	2
Mercury (filtered)	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0
Nickel (filtered)	mg/L	0.001	0.007	0.006	15	0.007	0.006	15
Selenium (filtered)	mg/L	0.001	0.001	<0.001	0	0.001	<0.01	0
Zinc (filtered)	mg/L	0.005	0.055	0.034	47	0.055	0.048	14
BTEX								
Benzene	µg/L	1	<1	<1	0	<1	<1	0
Toluene	µg/L	1	<1	<1	0	<1	<2	0
Ethylbenzene	µg/L	1	<1	<1	0	<1	<2	0
Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0
Xylene (o)	µg/L	1	<1	<1	0	<1	<2	0
Total Xylene	µg/L	3	<3	<3	0	<3	-	-
PAHs								
Acenaphthene	µg/L	1	<1	<1	0	<1	<2	0
Acenaphthylene	µg/L	1	<1	<1	0	<1	<2	0
Anthracene	µg/L	1	<1	<1	0	<1	<2	0
Benz(a)anthracene	µg/L	1	<1	<1	0	<1	<2	0
1-Chloronaphthalene	µg/L	5	<5	<5	0	<5	-	-
2-Methylnaphthalene	µg/L	2	<5	<5	0	<5	<2	0
Acetophenone	µg/L	2	<5	<5	0	<5	<2	0
Benzo(a)pyrene	µg/L	1	<1	<1	0	<1	<2	0
Benzo(b+j)fluoranthene	µg/L	1	<1	<1	0	<1	-	-
Benzo(g,h,i)perylene	µg/L	1	<1	<1	0	<1	<2	0
Benzo(k)fluoranthene	µg/L	1	<1	<1	0	<1	-	-
Chrysene	µg/L	1	<1	<1	0	<1	<2	0
7,12-Dimethylbenz(a)anthracene	µg/L	2	<5	<5	0	<5	<2	0
Dibenz(a,h)anthracene	µg/L	1	<1	<1	0	<1	<2	0
Fluoranthene	µg/L	1	<1	<1	0	<1	<2	0
Fluorene	µg/L	1	<1	<1	0	<1	<2	0
3-Methylcholanthrene	µg/L	2	<5	<5	0	<5	<2	0
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	0	<1	<2	0
Naphthalene	µg/L	1	<1	<1	0	<1	<2	0
Phenanthrene	µg/L	1	<1	<1	0	<1	<2	0
Pyrene	µg/L	1	<1	<1	0	<1	<2	0
2-Chloronaphthalene	µg/L	2	<5	<5	0	<5	<2	0
Phenols								
2-Methylphenol	µg/L	2	<3	<3	0	<3	<2	0
2-Nitrophenol	µg/L	2	<10	<10	0	<10	<2	0
2,4-Dimethylphenol	µg/L	2	<3	<3	0	<3	<2	0
2,4-Dinitrophenol	µg/L	30	<30	<30	0	<30	-	-
3-&4-Methylphenol (m&p-cresol)	µg/L	4	<6	<6	0	<6	<4	0
4-Chloro-3-methylphenol	µg/L	2	<10	<10	0	<10	<2	0
4-Nitrophenol	µg/L	30	<30	<30	0	<30	-	-
4,6-Dinitro-2-methylphenol	µg/L	30	<30	<30	0	<30	-	-
Phenol	µg/L	2	<3	<3	0	<3	<2	0
MAH								
1,2,4-Trimethylbenzene	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.005	0
1,3,5-Trimethylbenzene	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.005	0
Isopropylbenzene	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.005	0
Styrene	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.005	0
Total Monocyclic Aromatic Hydrocarbons	mg/L	0.003	<0.003	<0.003	0	<0.003	-	-
Halogenated Benzenes								
1,2,3-Trichlorobenzene	µg/L	5	<5	<5	0	<5	<5	0
1,2-Dichlorobenzene	µg/L	1	<1	<1	0	<1	<2	0
1,2,3,4-Tetrachlorobenzene	µg/L	5	<5	<5	0	<5	-	-
1,2,3,5-Tetrachlorobenzene	µg/L	5	<5	<5	0	<5	-	-
1,2,4,5-Tetrachlorobenzene	µg/L	5	<5	<5	0	<5	-	-
1,2,4-Trichlorobenzene	µg/L	2	<5	<5	0	<5	<2	0
1,3-Dichlorobenzene	µg/L	1	<1	<1	0	<1	<2	0
1,3,5-Trichlorobenzene	µg/L	5	<5	<5	0	<5	-	-
1,4-Dichlorobenzene	µg/L	1	<1	<1	0	<1	<2	0
4-Chlorotoluene	µg/L	1	<1	<1	0	<1	<5	0
Bromobenzene	µg/L	1	<1	<1	0	<1	<5	0
Chlorobenzene	µg/L	1	<1	<1	0	<1	<5	0
Pentachlorobenzene	µg/L	2	<5	<5	0	<5	<2	0
Halogenated Hydrocarbons								
1,2-Dibromoethane	µg/L	1	<1	<1	0	<1	<5	0
Bromomethane	µg/L	1	<1	<1	0	<1	<50	0
Dichlorodifluoromethane	µg/L	1	<1	<1	0	<1	<50	0
Iodomethane	µg/L	1	<1	<1	0	<1	<5	0
Trichlorofluoromethane	µg/L	1	<1	<1	0	<1	<50	0
Chlorinated Hydrocarbons								
1,1-Dichloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,1-Dichloroethene	µg/L	1	<1	<1	0	<1	<5	0
1,1,1,2-Tetrachloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,1,1-Trichloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,1,2-Trichloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,1,2,2-Tetrachloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,3-Dichloropropane	µg/L	1	<1	<1	0	<1	<5	0
1,2,3-Trichloropropane	µg/L	1	<1	<1	0	<1	<5	0
1,2-Dichloroethane	µg/L	1	<1	<1	0	<1	<5	0
1,2-Dichloropropane	µg/L	1	<1	<1	0	<1	<5	0
Bromochloromethane	µg/L	1	<1	<1	0	<1	-	-
Benzyl Chloride	µg/L	5	<5	<5	0	<5	-	-
Bromodichloromethane	µg/L	1	<1	<1	0	<1	<5	0
Bromoform	µg/L	1	<1	<1	0	<1	<5	0
Carbon Tetrachloride	µg/L	1	<1	<1	0	<1	<5	0
Chlorodibromomethane	µg/L	1	<1	<1	0	<1	<5	0
Chloroethane	µg/L	1	<1	<1	0	<1	<50	0
Chloroform	µg/L	5	<5	<5	0	<5	<5	0
Chloromethane	µg/L	1	<1	<1	0	<1	<50	0
cis-1,2-Dichloroethene	µg/L	1	<1	<1	0	<1	<5	0
Dibromomethane	µg/L	1	<1	<1	0	<1	<5	0
cis-1,3-Dichloropropene	µg/L	1	<1	<1	0	<1	<5	0
Dichloromethane	µg/L	1	<1	<1	0	<1	-	-
Hexachlorobutadiene	µg/L	2	<5	<5	0	<5	<2	0
Hexachlorocyclopentadiene	µg/L	5	<5	<5	0	<5	<10	0
Hexachloroethane	µg/L	2	<5	<5	0	<5	<2	0
Tetrachloroethene	µg/L	1	<1	<1	0	<1	<5	0
trans-1,2-Dichloroethene	µg/L	1	<1	<1	0	<1	<5	0
trans-1,3-Dichloropropene	µg/L	1	<1	<1	0	<1	<5	0
Trichloroethene	µg/L	1	<1	<1	0	<1	<5	0
Vinyl Chloride	µg/L	1	<1	<1	0	<1	<50	0
Total Chlorinated Hydrocarbons	µg/L	5	<5	<5	0	<5	-	-
Total Other Chlorinated Hydrocarbons	µg/L	5	<5	<5	0	<5	-	-
Nitroaromatics								
2-Picoline	µg/L	2	<5	<5	0	<5	<2	0
4-Aminobiphenyl	µg/L	2	<5	<5	0	<5	<2	0
Pentachloronitrobenzene	µg/L	2	<5	<5	0	<5	<2	0
Halogenated Phenols								

		Location Code	MW02	MW02		MW02	MW02	
		Field ID	MW02	QA1		MW02	QA2	
		Date	22/11/2018	22/11/2018		22/11/2018	22/11/2018	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
		Lab Report No.	629482	629482	RPD	629482	EM1818991	RPD
	Unit	EQL						
2,4,5-Trichlorophenol	µg/L	2	<10	<10	0	<10	<2	0
2,4,6-Trichlorophenol	µg/L	2	<10	<10	0	<10	<2	0
2,4-Dichlorophenol	µg/L	2	<3	<3	0	<3	<2	0
2,6-Dichlorophenol	µg/L	2	<3	<3	0	<3	<2	0
2-Chlorophenol	µg/L	2	<3	<3	0	<3	<2	0
Pentachlorophenol	µg/L	4	<10	<10	0	<10	<4	0
2,3,4,6-Tetrachlorophenol	µg/L	10	<10	<10	0	<10	-	-
SVOCs								
Dibenz(a,j)acridine	µg/L	5	<5	<5	0	<5	-	-
3,3-Dichlorobenzidine	µg/L	2	<5	<5	0	<5	<2	0
4-(Dimethylamino) Azobenzene	µg/L	2	<5	<5	0	<5	<2	0
4-Bromophenyl Phenyl Ether	µg/L	2	<5	<5	0	<5	<2	0
4-Chlorophenyl Phenyl Ether	µg/L	2	<5	<5	0	<5	<2	0
Bis(2-chloroethoxy) methane	µg/L	2	<5	<5	0	<5	<2	0
Bis(2-chloroisopropyl)ether	µg/L	5	<5	<5	0	<5	-	-
Dibenzofuran	µg/L	2	<5	<5	0	<5	<2	0
N-Nitrosopiperidine	µg/L	2	<5	<5	0	<5	<2	0
Organochlorine Pesticides								
a-BHC	µg/L	2	<5	<5	0	<5	<2	0
b-BHC	µg/L	2	<5	<5	0	<5	<2	0
d-BHC	µg/L	2	<5	<5	0	<5	<2	0
g-BHC (Lindane)	µg/L	2	<5	<5	0	<5	<2	0
Aldrin	µg/L	2	<5	<5	0	<5	<2	0
Dieldrin	µg/L	2	<5	<5	0	<5	<2	0
DDT	µg/L	4	<5	<5	0	<5	<4	0
4,4-DDE	µg/L	2	<5	<5	0	<5	<2	0
DDD	µg/L	2	<5	<5	0	<5	<2	0
Endosulfan I	µg/L	2	<5	<5	0	<5	<2	0
Endosulfan II	µg/L	2	<5	<5	0	<5	<2	0
Endosulfan sulfate	µg/L	2	<5	<5	0	<5	<2	0
Endrin	µg/L	2	<5	<5	0	<5	<2	0
Endrin aldehyde	µg/L	5	<5	<5	0	<5	-	-
Endrin ketone	µg/L	5	<5	<5	0	<5	-	-
Heptachlor	µg/L	2	<5	<5	0	<5	<2	0
Heptachlor epoxide	µg/L	2	<5	<5	0	<5	<2	0
Methoxychlor	µg/L	5	<5	<5	0	<5	-	-
Herbicides								
Pronamide	µg/L	2	<5	<5	0	<5	<2	0
Trifluralin	µg/L	5	<5	<5	0	<5	-	-
Fungicides								
Hexachlorobenzene	µg/L	4	<5	<5	0	<5	<4	0
Phthalates								
Bis(2-ethylhexyl) Phthalate	µg/L	5	<5	<5	0	<5	<10	0
Butyl Benzyl Phthalate	µg/L	2	<5	<5	0	<5	<2	0
Diethyl Phthalate	µg/L	2	<5	<5	0	<5	<2	0
Dimethyl Phthalate	µg/L	2	<5	<5	0	<5	<2	0
Dibutyl Phthalate	µg/L	2	<5	<5	0	<5	<2	0
Di-n-octyl Phthalate	µg/L	2	<5	<5	0	<5	<2	0
Solvents								
Methyl Ethyl Ketone (MEK)	µg/L	1	<1	<1	0	<1	<50	0
4-Methyl-2-pentanone	µg/L	1	<1	<1	0	<1	<50	0
Acetone	µg/L	1	<1	<1	0	<1	-	-
Allyl chloride	µg/L	1	<1	<1	0	<1	-	-
Carbon disulfide	µg/L	1	<1	<1	0	<1	<5	0
Explosives								
2,4-Dinitrotoluene	µg/L	4	<5	<5	0	<5	<4	0
2,6-Dinitrotoluene	µg/L	4	<5	<5	0	<5	<4	0
Nitrobenzene	µg/L	2	<50	<50	0	<50	<2	0
Amino Aromatics								
1-naphthylamine	µg/L	2	<5	<5	0	<5	<2	0
2-naphthylamine	µg/L	5	<5	<5	0	<5	-	-
Diphenylamine	µg/L	5	<5	<5	0	<5	-	-
Amino Aliphatics								
N-nitrosodi-n-butylamine	µg/L	2	<5	<5	0	<5	<2	0
N-nitrosodi-n-propylamine	µg/L	2	<5	<5	0	<5	<2	0
Anilines								
2-nitroaniline	µg/L	4	<5	<5	0	<5	<4	0
Aniline	µg/L	2	<5	<5	0	<5	<2	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Appendix K: Regulatory Framework for Assessment



Appendix K: Regulatory Framework for Assessment

The following sections outline the regulatory framework under which contamination of land and groundwater is assessed and managed in Victoria and specify relevant objectives and/or investigation levels which have been adopted for initial assessment of whether pollution is present at the site.

Soil

K.1 Regulatory Framework

The *State Environment Protection Policy (Prevention and Management of Contamination of Land) 2002* (SEPP (PMCL)) sets out the regulatory framework for the prevention and management of contaminated land within the State of Victoria. The intent of this framework is to maintain and maximise, to the extent practicable, the quality of the land environment in Victoria, in order to protect its existing and potential beneficial uses. The SEPP (PMCL) was declared in June 2002 in accordance with Section 16 of the *Environment Protection Act, 1970*, and EPA Victoria is responsible for its implementation.

The SEPP (PMCL) identifies a range of land use categories and relevant protected beneficial uses for each of these categories, as well as indicators (chemical or other characteristics) and objectives for these indicators to determine whether the level of an indicator may pose an unacceptable risk to (i.e. precludes) protected beneficial uses. A state of pollution exists where the concentration of a physical, chemical, biological or radiological characteristic (indicator) does not meet the relevant soil quality objective for that indicator and therefore precludes a protected beneficial use for a relevant land use category.

The protected beneficial uses of land at the site, and the soil quality objectives specified in the SEPP (PMCL) for each protected beneficial use of land, are discussed in the following sections.

K.2 Protected Beneficial Uses of Land

As discussed in **Section 5**, The site is currently used for commercial use and it is considered likely future uses of the site may include commercial and/or high density residential. In accordance with the SEPP (PMCL) the protected beneficial uses of land for commercial and high density residential use are the following:

- Maintenance of highly modified ecosystems.
- Human health.
- Buildings and structures.
- Aesthetics.



K.3 Soil Quality Objectives

Soil quality objectives (also commonly referred to as investigation levels) for the protected beneficial uses of land were adopted in accordance with Table 2 of the SEPP (PMCL), and are detailed in the following table:

Beneficial Use	Adopted Soil Quality Objectives/Investigation Levels
Maintenance of Ecosystems (Highly Modified)	<p>The SEPP (PMCL) states that the level of a chemical substance or waste (indicator) must not be greater than any regional Ecological Investigation Level (EIL) developed in accordance with the <i>National Environment Protection (Assessment of Site Contamination) Measure</i> ('the NEPM'; NEPC, 2013), or until such time that a regional EIL applicable to the site is published, the Interim Urban EILs nominated in the NEPM.</p> <p>The current version of the NEPM (NEPC, 2013) specifies the following ecologically based investigation and/or screening levels:</p> <ul style="list-style-type: none"> • Default EILs for arsenic, lead, DDT and naphthalene. • A methodology for derivation of site-specific EILs for nickel, chromium III, copper and zinc. The derivation process requires determination of ambient background concentrations (ABC) and added contaminant limits (ACLs) for these chemicals, and the EIL is then calculated as the ABC plus the ACL. • Ecological screening levels (ESLs) for benzene, toluene, ethylbenzene, xylenes (BTEX), benzo(a)pyrene and petroleum hydrocarbon fractions. <p>The EILs and ESLs have been developed for three generic land use settings, based on a range of species protection levels:</p> <ul style="list-style-type: none"> • Areas of ecological significance (99% species protection). • Urban residential and public open space (80% species protection). • Commercial and industrial (60% species protection). <p>Based on the current and likely future land use(s) at the site, EILs/ESLs for commercial/industrial as well as urban residential and public open space have been adopted.</p> <p>EILs for nickel, chromium III, copper and zinc were calculated based on site-specific data in accordance with NEPC (2013) Schedules B1 and B5c.</p>
Human Health	<p>The SEPP (PMCL) states that the level of a chemical substance or waste must not be greater than the investigation level specified for human health in the NEPM.</p> <p>Schedule B(1) of the current version of the NEPM (NEPC, 2013) provides a range of investigation levels for the protection of human health, referred to as Health-based Investigation Levels (HILs), and provides Health Screening Levels (HSLs) for BTEX and petroleum hydrocarbons. HILs and HSLs are provided for four generic land use settings as follows:</p> <ul style="list-style-type: none"> • HIL/HSL A – Residential with garden/accessible soil (home-grown produce contributing less than 10% of vegetable and fruit intake; no poultry). This category also includes children's day-care centres, kindergartens, preschools and primary schools. • HIL/HSL B – Residential with minimal opportunities for soil access. Includes dwellings with fully and permanently paved yard space such as high-rise apartments and flats. • HIL/HSL C – Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate. • HIL/HSL D – Commercial/industrial such as shops, offices, factories and industrial sites. <p>It is emphasised within the NEPM that HILs are not intended for use as default remediation trigger criteria but are intended to prompt an appropriate site-specific assessment of risk when they are exceeded. This is consistent with Table 2 of the SEPP (PMCL), which allows for objectives derived using a risk-based methodology to be adopted in place of HILs.</p> <p>Based on the current and likely future land use(s) at the site of commercial/industrial and high density residential, NEPM HIL/HSL B and D values have been used for comparison with reported soil conditions at the Site.</p> <p>For chemicals for which HILs or HSLs are not specified in the NEPM, the latest available Regional Screening Levels (RSLs) published by the USEPA are adopted. As relevant, 'residential' values have been adopted for assessment of residential and parkland/recreation land uses (Settings A, B and C), and 'industrial' values have been adopted for assessment of commercial and/or industrial land uses (Setting D).</p>



Beneficial Use
Adopted Soil Quality Objectives/Investigation Levels

With respect to the use of HSLs, the following is noted:

- The HSLs in the NEPM (for TPH, BTEX and naphthalene) were derived with consideration of potential vapour exposure, and consider a range of soil types and contamination depths. Friebel and Nadebaum (2011), who derived the HSLs currently adopted in the NEPM, also derived values for direct contact exposure, however these were not published in the NEPM. The HSL values adopted for this assessment were the lowest of those derived for vapour intrusion (published in the NEPM) or direct contact pathways (published by Friebel and Nadebaum, 2011) for the relevant land use(s). Where relevant, the most conservative of the vapour-based values (those derived for sand lithology and with contamination at depths of 0 to <1 m depth) were adopted.

Buildings and Structures

The SEPP (PMCL) states “*Contamination must not cause the land to be corrosive to or adversely affect the integrity of structures or building materials*”.

Relevant indicators are stated by the SEPP (PMCL) to be “*pH, sulphate, redox potential, salinity or any chemical substance or waste that may have a detrimental impact on the structural integrity of buildings or other structures.*”

Objectives for these key indicators have primarily been sourced from Australian Standard 2159–2009 *Piling Design and Installation*, in which levels of pH, chloride and sulphate which are considered to represent mild and/or non-aggressive conditions for concrete or steel piles are specified. The values adopted for initial screening (<5,000 mg/kg sulphate, pH >5 and <5,000 mg/kg chloride) are the most conservative of those reported in AS2159 for concrete and steel piles, and are considered to be associated with mild or non-aggressive conditions only where all objectives are met. Where one or more objective is not met, conditions may still be acceptable, but exposure conditions should be further evaluated in accordance with Tables 6.4.2(C) and 6.5.2(C) within AS2159.

The potential for organic compounds (e.g. solvents or petroleum hydrocarbons) to corrode or adversely impact (e.g. permeate) non-metal underground services should also be considered, particularly where saturated concentrations or free phase product are in contact with buildings and/or structures.

Aesthetics

The SEPP (PMCL) states, “*Contamination must not cause the land to be offensive to the senses of human beings*”. The aesthetic quality of soil is based on subjective assessment. With respect to ACM, Senversa has adopted a criterion of ‘no visible ACM’ in surface soils (upper 10 cm).

K.4 Groundwater

K.4.1 Regulatory Framework

The State Environment Protection Policy (Waters) (SEPP Waters; State of Victoria, 2018) sets out the framework to protect and improve the quality of Victoria’s waters (including groundwater), having regard to the principles of environment protection set out in the *Environment Protection Act 1970* (the Act).

The SEPP Waters defines a range of protected beneficial uses for defined segments of the groundwater environment, based on groundwater salinity (as TDS). The SEPP Waters also specifies indicators (chemical or other characteristics) and objectives to determine whether the level of an indicator may pose an unacceptable risk (i.e. potentially precludes) protected beneficial uses. Groundwater is considered polluted where one or more of the following situations exists:

- The groundwater quality objectives for any protected beneficial use are exceeded. Where groundwater quality objectives are exceeded by natural levels, the natural background levels become the objective.
- There is otherwise a detriment to a beneficial use (e.g. the presence of odours in water used for irrigation or recreation use).



- Non-aqueous phase liquid (NAPL) is present. All beneficial uses of groundwater are considered precluded where NAPL is present with the exception of Buildings and Structures which is considered precluded only when in contact with groundwater.

K.4.2 Relevant Groundwater Segment

A review of published information, laboratory analysis and field data from the site was undertaken to assess the groundwater segment at the site. The review indicated that:

- According to the VVG database, groundwater salinity in the uppermost aquifer is expected to range from 500 to 1,100 mg/L TDS.
- Based on groundwater investigations undertaken in surrounding audit reports, groundwater salinity ranged from 750 to 2,700 mg/L TDS.
- Laboratory measured TDS concentrations at the site ranged from 640 mg/L (MW02) to 930 mg/L (MW01).

Taking into consideration the above information, the underlying groundwater is considered to be Segment A2 (as defined in the SEPP (Waters)).

K.4.3 Protected Beneficial Uses of Groundwater

The SEPP (Waters) requires that Segment A2 groundwater is protected for the following beneficial uses:

- Water dependent ecosystems and species.
- Potable water supply (acceptable).
- Potable mineral water supply.
- Agriculture and irrigation (irrigation).
- Agriculture and irrigation (stock watering).
- Industrial and commercial.
- Water based recreation (primary contact recreation).
- Traditional owners' cultural values.
- Cultural and spiritual values.
- Buildings and structures.
- Geothermal properties.

K.4.4 Groundwater Quality Objectives

Groundwater quality objectives (also commonly referred to as investigation levels) for the protected beneficial uses of groundwater were adopted in accordance with Table 3 of the SEPP Waters, and are detailed in the following table:



Beneficial Use
Adopted Groundwater Quality Objectives/Investigation Levels

Water Dependent Ecosystems and Species

The SEPP Waters states that “groundwater must not cause receiving waters to be affected to the extent that the level of any environmental quality indicator is greater than the level... specified for surface waters in this Policy” and “groundwater quality must not adversely affect the maintenance of environmental values that depend on groundwater.” Therefore, the beneficial uses of surface waters and environmental quality indicators and objectives as set out in Schedules 2 and 3 of SEPP Waters apply. The beneficial uses and objectives specified in the SEPP Waters depend on the receiving surface water body and apply at the zone of discharge

The nearest identified surface water receptors in the vicinity of the site nearest surface water body to the site boundary is the downstream estuarine section of Elster Creek (around 1.3 km southwest). Port Phillip Bay is around 1.4 km west to southwest of the site. Albert Park Lake is around 2 km northwest. These are considered to be within either the inland Central Foothills and Coastal Plains Segment or Hobsons Bay sub-segment of Port Phillip Bay. Both of these segments are “slightly to moderately modified as defined by the SEPP.

Water quality objectives for the Central Foothills and Coastal Plains Segment or Hobsons Bay sub-segment are specified in Section 1 of Schedule 3 of the SEPP Waters to be those listed in the *Australian Water Quality Guidelines for Fresh and Marine Waters* (ANZECC/ARMCANZ¹, 2000), unless alternative objectives are listed in Table 1 of Schedule 3. Table 1 of Schedule 3 specifies the following:

- Objectives for toxicants are those for the protection of aquatic ecosystems as listed in ANZECC/ARMCANZ (2000). As the Central Foothills and Coastal Plains Segment or Hobsons Bay sub-segment of Port Phillip Bay segment is defined within Schedule 2 as a “slightly to moderately modified ecosystem”, the 95% protection levels set out in ANZECC/ARMCANZ (2000) are considered to apply (as per clause 1(6)(b) of Schedule 3 to SEPP Waters). For toxicants which are bioaccumulative the next highest level of protection has been adopted in accordance with clause 1(6)(b)(iv) of Schedule 3. Where high and/or moderate reliability trigger values for a chemical are not published, Senversa has adopted low reliability trigger values (where available) as an indicative interim working level, in accordance with ANZECC/ARMCANZ (2000).
- Objectives for water quality parameters (pH, electrical conductivity, dissolved oxygen, turbidity) and some nutrients (total phosphorus and total nitrogen) are listed and have been adopted as indicative screening levels where these parameters are considered to have been impacted by site contamination. However, Senversa notes that these objectives may not be achievable in natural aquifer systems prior to discharge even in the absence of contamination, due to natural geochemical and biochemical conditions with the aquifer.

Potable Water Supply

The SEPP Waters states that “groundwater must not be affected to the extent that the level of any environmental quality indicator is greater than the level ... specified for raw water for drinking water supply in the Australian Drinking Water Guidelines” and “constituents of groundwater must not be affected in a manner or to an extent that leads to the aesthetic water qualities being impacted, as defined in the Australian Drinking Water Guidelines.”

The values adopted from the drinking water guidelines (National Health and Medical Research Council, 2011) are the lower of health and aesthetic based values, where relevant.

For chemicals for which guidelines are not specified by NHMRC (2011), guidelines from the following alternative international sources have been adopted (in order of preference):

- WHO (2011), Guidelines for Drinking Water Quality (and associated rolling revisions)
- USEPA. Regional Screening Levels - Tap Water (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>).

Potable Mineral Water Supply

This beneficial use is not considered relevant at the site as groundwater does not have mineral water characteristics (e.g. carbon dioxide and other soluble matter in sufficient concentration to cause effervescence) as defined in SEPP Waters. As such this beneficial use is not considered further.

¹ Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resources Management Council of Australia and New Zealand (ARMCANZ).



Beneficial Use
Adopted Groundwater Quality Objectives/Investigation Levels

Agriculture and Irrigation (Irrigation)

For agriculture and irrigation (irrigation), the SEPP Waters specifies indicators and objectives from ANZECC/ARMCANZ (2000) i.e. those for *Irrigation and General Water Use* within Section 4.2 of the guidelines.

The above guidelines specify both Long Term Trigger Values (LTVs) and Short Term Trigger Values (STVs) for water used for irrigation, defined as follows:

- LTV: the maximum contaminant concentration which can be tolerated assuming 100 years of irrigation.
- STV: the maximum contaminant concentration which can be tolerated for a shorter period of time (20 years).

Groundwater data has been compared to both LTVs and STVs in order to provide an indication of the potential for adverse impacts to this beneficial use, as well as the timeframe over which adverse impacts may be expected.

Agriculture and Irrigation (Stock Watering)

For agriculture and irrigation (stock watering), the SEPP Waters specifies indicators and objectives from ANZECC/ARMCANZ (2000) i.e. those for *Livestock Drinking Water Quality* within Section 4.3 of the guidelines.

For contaminants for which no livestock drinking water quality criteria are provided, drinking water guidelines for human health have been adopted. Current drinking water guidelines to supplement the above values were adopted from the following sources (in order of preference):

- NHMRC (2011), Australian Drinking Water Guidelines - Health
 - WHO (2011), Guidelines for Drinking Water Quality (and associated rolling revisions)
 - USEPA. Regional Screening Levels - Tap Water (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>).
-

Industrial and Commercial

The SEPP Waters states that “*groundwater must not be affected to the extent that industrial or commercial water quality is impacted.*”

No generic investigation levels or thresholds for industrial and commercial water quality are provided in ANZECC/ARMCANZ (2000). However, where an existing, proposed or likely industrial or commercial use may occur on or in the vicinity of the site, the potential for contamination to preclude this beneficial use was further considered. SEPP Waters states that consideration must be given to Section 2.2.4 of ANZECC/ARMCANZ (2000) for guidance on deriving guidelines for compounds where no guidelines currently exist.

Based on the nature of land use on and in the vicinity of the site (i.e. mixed use development surrounded by low density residential and commercial properties), the likelihood of this beneficial use being realised on or in the vicinity of the site is considered to be low, and has not been considered further.



Beneficial Use
Adopted Groundwater Quality Objectives/Investigation Levels

Water Based Recreation (Primary Contact Recreation)

For primary contact recreation, the SEPP Waters specifies indicators and objectives from NHMRC (2008) *Guidelines for Managing Risks in Recreational Water*.

Drinking water guidelines were recommended by the above source in order to protect swimmers from harmful effects through ingestion. NHMRC (2008) specifies that higher concentrations of toxicants may be acceptable for water used for recreational purposes as a person is considered to ingest a maximum of 200 mL water during recreational exposure, compared to an ingestion rate of 2 litres per day assumed in the derivation of drinking water guidelines. However, this document also notes that special care must be taken for substances that can enter the body through skin absorption and/or inhalation during recreational use.

In keeping with the principles of the above guidance document, Senversa has adopted the current drinking water guidelines as objectives for protection of the primary contact recreation beneficial use. Drinking water objectives were sourced from Australian or international sources in the following order of preference:

- NHMRC (2011), Australian Drinking Water Guidelines - Health and/or Aesthetic (lower of health or aesthetic guideline adopted where applicable).
- WHO (2011), Guidelines for Drinking Water Quality (and associated rolling revisions)
- USEPA. Regional Screening Levels - Tap Water (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>).

Where the above objectives adopted for initial screening are exceeded, consideration should be given to whether an adjustment of the drinking water guideline is appropriate (as per NHMRC, 2008).

For microbiological parameters, SEPP Waters states:

- *Microbial water quality must not be affected to the extent that the environmental quality indicator of E. coli is greater than 10 E. coli/100 mL.*
 - *When human faecal contamination sources have been identified, no E. coli must be present.*
-

Traditional Owners' Cultural Values & Cultural and Spiritual Values

No environmental quality objectives for traditional owners' cultural values and for cultural and spiritual values have been specified in SEPP Waters, therefore the objectives for water dependent ecosystems and species and water based recreation have been adopted as default objectives on the assumption that if these objectives are achieved, then the beneficial use of traditional owners' cultural values will also be protected. In circumstances where these objectives were not attained, clause 17(4) identifies that *if the level of any environmental quality indicator or objective is not provided for in Schedule 3, contamination must not cause an adverse impact on the beneficial uses.*

Buildings and Structures

The SEPP Waters states "*introduced contaminants must not cause groundwater to become corrosive to structures or building materials*" therefore naturally elevated indicators were not considered.

Relevant indicators are stated by the SEPP Waters to be pH, sulphate, chloride, redox potential, salinity or any chemical substance which may have a detrimental impact on the structural integrity of buildings or other structures.

Objectives for these indicators have primarily been sourced from Australian Standard 2159-2009 (*Piling – Design and Installation*), in which levels of pH, chloride and sulphate considered to represent mild and/or non-aggressive conditions for concrete or steel piles are specified. The objectives adopted for initial screening (<1,000 mg/L sulphate, pH >5 and <1,000 mg/L chloride) are the most conservative of those reported in AS2159 for concrete and steel piles and are considered to be associated with mild or non-aggressive conditions only where all objectives are met. Where one or more objective is not met, conditions may still be acceptable, but exposure conditions should be further evaluated in accordance with Tables 6.4.2(C) and 6.5.2(C) within AS2159.

In addition, particularly reducing or oxidising conditions (as indicated by field-measured redox potential) need to be considered where shallow groundwater is present.

Based on the depth to groundwater, it is considered possible that building foundations and/or other infrastructure (e.g. service conduits) could come into direct contact with groundwater.

Geothermal Properties

The SEPP Waters states "*no activity must affect the geothermal properties of groundwater*". Indicators that natural groundwater geothermal properties need protection "*include temperature between 30 and 70 degrees Celsius*".

The measured temperature of groundwater at the site is less than 20 degrees Celsius, indicating that geothermal use is not protected in groundwater at the site. As such this beneficial use is not considered further.



Appendix L: Lithology Logs

PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe





HOLE LOCATION (Easting, Northing) Camden Street carpark

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING					FIELD MATERIAL DESCRIPTION				SAMPLING		
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT				0.0		ASPHALT	ASPHALT: 70 mm thick.	M			
				0.1		FILL	FILL: Light grey-brown, fine to medium grained gravelly sand with trace silt, fine to medium grained gravels. Well graded, sub-angular to sub-rounded sand and poorly graded sub-angular to angular gravels.				
				0.5		CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay. Trace fine grained sand. Uniform graded, sub-rounded to rounded sand.	D-M		0.7	SB01_0.4 - 0.5
				0.9			Tree root at 0.9 m bgl.			0.2	SB01_0.9 - 1.0
				1.5			SB01 terminated at 1.50 m bgl Target Depth Reached.				
				2.0							

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe



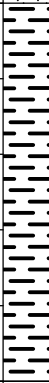
HOLE LOCATION (Easting, Northing) Camden Street carpark

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION			SAMPLING		
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT				0.5		ASPHALT	ASPHALT: 30 mm thick.				
						FILL	FILL: Light grey-brown, fine to medium grained gravelly sand with minor silt and clay. Fine to medium grained gravels. Well graded, sub-angular to sub-rounded sand and poorly graded, sub-angular to angular gravels.				
				1.0		SC	Clayey SAND: Low plasticity. Grey-brown with orange-brown mottles, fine grained clayey sand, uniform graded, sub-rounded to rounded sand.	M		0.6	SB02_0.4 - 0.5
				1.5		CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff clay. Trace fine grained sand. Uniform graded, sub-rounded to rounded sand.	D-M		0.6	SB02_1.0 - 1.1
				2.0			SB02 terminated at 1.50 m bgl Target Depth Reached.				

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation

 PROJECT NUMBER M17003

 PROJECT LOCATION Alfred and Camden Streets, Balaclava

 DATE STARTED 23/11/18

 COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

 DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

 EQUIPMENT Geoprobe






 HOLE LOCATION (Easting, Northing) Camden Street carpark

 HOLE SIZE 90 mm

 LOGGED BY SO

 CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING	
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT						ASPHALT	ASPHALT: 30 mm thick.				
						FILL	FILL: Light grey-brown, gravel, trace sand and bitumen. Fine to medium grained, sub-angular to angular gravels.			0.4	SB03_0.2 - 0.3
				0.5		FILL	FILL: Brown, fine to medium grained sandy gravel. Fine to medium grained sand. Poorly graded, sub-angular to angular gravels and poorly graded sub-rounded to sub-angular sands.			0.6	SB03_0.3 - 0.4
						SC	Clayey SAND: Low plasticity. Grey-brown with orange-brown mottles, fine grained clayey sand, uniform graded, sub-rounded to rounded sand.	M			
				1.0		CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay. Trace fine grained sand. Uniform graded, sub-rounded to rounded sand.				0.7
			1.5				SB03 terminated at 1.50 m bgl Target Depth Reached.				
			2.0								











1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation
PROJECT NUMBER M17003
PROJECT LOCATION Alfred and Camden Streets, Balaclava
DATE STARTED 23/11/18
COMPLETED 23/11/18
R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling
R.L. CASING _____

EQUIPMENT Geoprobe
HOLE LOCATION (Easting, Northing) Camden Street carpark
HOLE SIZE 90 mm
LOGGED BY SO
CHECKED BY SK
NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING	
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT						ASPHALT	ASPHALT: 100 mm thick.				
						FILL	FILL: Light grey-brown, fine to medium grained gravel, poorly graded, sub-angular to angular gravels. Anthropogenic material included trace bitumen.			0.6	SB04_0.2 - 0.3
				0.5		FILL	FILL: Grey-brown, fine to medium grained clayey sand with trace silt and fine to coarse grained gravels. Poorly graded, sub-rounded sand.				
						CL	Sandy CLAY: Medium plasticity. Light grey-brown with orange-brown mottles. Firm sandy clay. Fine grained, uniform graded, sub-rounded sands.			0.7	SB04_0.5 - 0.6
						CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay. Trace fine grained sand. Uniform graded, sub-rounded to rounded sand.				
				1.0							
						CL	Sandy CLAY: Medium plasticity. Light orange-brown, fine grained, soft sandy clay. Uniform graded, sub-rounded to rounded sands.				
				1.5						0.6	SB04_1.4 - 1.5
							SB04 terminated at 1.50 m bgl Target Depth Reached.				
				2.0							

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18



PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe

HOLE LOCATION (Easting, Northing) Coles back dock

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING	
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT				0.5		CONCRETE	CONCRETE: 150 mm thick.	M			
						FILL	FILL: Brown, fine to medium grained sandy gravel. Fine to medium grained sand. Poorly graded, sub-angular to angular gravels and poorly graded sub-rounded to sub-angular sands.				
						FILL	FILL: Pale brown, fine to coarse grained sand, gap graded, sub-rounded to rounded sand.	D-M		0.6	SB05_0.2 - 0.3
						CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay. Trace fine grained sand and fine to medium grained gravels. Uniform graded, sub-rounded to rounded sand and poorly graded, sub-rounded to sub-angular gravels (Gravels decreasing with depth).				
				1.0							
				1.5							
				2.0			SB05 terminated at 1.50 m bgl Target Depth Reached.				

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe





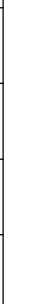
HOLE LOCATION (Easting, Northing) South corner of Alfred and Nelson Streets

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING	
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT						ASPHALT	ASPHALT: 30 mm thick.				
						FILL	FILL: Dark grey, fine to medium grained gravel. Poorly graded, sub-angular to angular gravels. Anthropogenic material included minor bitumen.			0.6	SB06_0.2 - 0.3
				0.5		FILL	FILL: Dark grey, fine to medium grained sandy gravel with minor silt and clay. Fine to coarse grained sand. Poorly graded, sub-angular to angular gravels and well graded, sub-rounded to sub-angular sands.	M		0.7	SB06_0.7 - 0.8
				1.0		SC	Clayey SAND: Low plasticity. Grey-brown with orange-brown mottles, fine grained clayey sand. Uniform graded, sub-rounded to rounded sand.				
				1.5		CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay with minor fine grained sand and trace fine to medium grained gravels. Uniform graded, sub-rounded to rounded sand and gap graded sub-rounded to sub-angular gravels.	D-M		0.7	SB06_1.4 - 1.5
			2.0				SB06 terminated at 1.50 m bgl Target Depth Reached.				

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe





HOLE LOCATION (Easting, Northing) South corner of Alfred and Nelson Streets

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING		
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)	
PT						ASPHALT	ASPHALT: 90 mm thick.					
						FILL	FILL: Grey-brown, fine to coarse grained sandy gravel with minor silt and clay. Fine to coarse grained sand. Well graded sub-angular to angular gravels and well graded sub-rounded to sub-angular sands.	D-M		0.7	SB07_0.2 - 0.3	
				0.5		FILL	FILL: Pale grey-brown, fine to coarse grained sand, gap graded, sub-rounded to rounded sand.	D		0.8	SB07_0.7 - 0.8	
				1.0		CH	Silty CLAY: High plasticity. Grey-brown with orange-brown mottles, stiff silty clay. Minor fine grained sand and trace fine to medium grained gravels. Uniform graded sub-rounded to rounded sand and gap graded sub-rounded to sub-angular gravels.				0.7	SB07_1.0 - 1.1
				1.5				SB07 terminated at 1.50 m bgl Target Depth Reached.				
				2.0								

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18

PROJECT NAME Detailed Site Investigation

PROJECT NUMBER M17003

PROJECT LOCATION Alfred and Camden Streets, Balaclava

DATE STARTED 23/11/18

COMPLETED 23/11/18

R.L. SURFACE _____

DATUM _____

DRILLING CONTRACTOR Horizon Drilling

R.L. CASING _____

EQUIPMENT Geoprobe





HOLE LOCATION (Easting, Northing) South corner of Alfred and Nelson Streets

HOLE SIZE 90 mm

LOGGED BY SO

CHECKED BY SK

NOTES _____

DRILLING						FIELD MATERIAL DESCRIPTION				SAMPLING	
Method	Core Recovery (%)	Water	Well Details	Depth (m)	Graphic Log	Classification Symbol	Material Description	Moisture	Additional Observations	PID (ppm)	Sample ID & Interval (QA/QC)
PT				0.0		ASPHALT	ASPHALT: 70 mm thick.				
				0.2		FILL	FILL: Grey-brown, fine to coarse grained gravelly sand with trace silt. Fine to medium grained gravels. Well graded, sub-angular to sub-rounded sand and gap graded sub-angular to angular gravels.			0.7	SB08_0.2 - 0.3
				0.5		FILL	FILL: Pale grey-brown, fine to coarse grained sand with minor gravels and clay and trace wood chips. Fine to medium grained gravels. Well graded sub-rounded to rounded sand and gap graded sub-angular to angular gravels.			0.8	SB08_0.4 - 0.6
				1.0		CH	Silty CLAY: Medium plasticity. Orange-brown with grey-brown mottles, firm silty clay. Minor fine grained sand and trace plant roots. Uniform graded sub-rounded to rounded sand.		D-M		
			1.5				SB08 terminated at 1.50 m bgl Target Depth Reached.			0.8	SB08_1.4 - 1.5
			2.0								

1. SENVERSA STANDARD M17003.GPJ SENVERSA_GINT.GDT 11/12/18



Appendix M: Field Sheets



Groundwater Sampling and Field Chemical Characteristics Record

Site and Job Number		Well Information	
Job Number: M17003		Well ID: MW2	Gatic Type (old/new):
Project Name: Detailed Site Investigation		Well Construction (MUSH, stickup):	Well Diameter (mm): 50
Client: City of Port Phillip		Surface Casing Height (m bgl):	Key Type (e.g. 8mm gatic):
Location: Balaclava		Survey Mark Present?: <input checked="" type="checkbox"/>	Well Condition: EXCELLENT

Well Gauging		Well Purging	
Date/Time: 8:30 22/11/19	Probe Type & ID No. SOLINST INTERFACE	Date/Time: 22/11/18 Start 12:03 Finish 12:25	
Depth to Product: m bTOC	Product Thickness: m	Method (bailer, low flow, other): MICROPURGE	Depth to Water with Pump: 3.42
Depth to Water: 3.395 m bTOC	Product Description:	Depth (pump intake setting bTOC):	Sediment Thickness in Well (m)
Total Depth of Well: 14.2 m bTOC	Product Confirmed with Bailer: Yes / No	Total Volume Purged (L): ^g	Screen Interval (m bgl):

Time	Pump Rate	Refill / Discharge	Volume (L)	WL (m bTOC)	DO (mg/L)** ±10%* ^	EC (µS/cm) ±3%*	pH ±0.05*	Redox (mV) ±10mV*	Temp (°C) ±10%*	Observations (odour, sheen, colour, turbidity):
12:09	CPM	40/20	0.4	3.42	2.69	1203	6.37	90.7	18.0	LOW TURB, CLEAR, NO SHEEN, NO ODOUR ↓
12:12	CPM	40/20	0.8	3.42	1.32	1201	6.08	103.5	18.1	
12:16	CPM	40/20	1.2	3.42	1.13	1200	6.01	105.0	18.1	
12:19	CPM	40/20	1.6	3.42	1.27	1198	5.99	106.3	18.1	
12:22	CPM	40/20	2.0	3.42	1.66	1198	5.99	106.6	18.3	
12:25	CPM	40/20	2.4	3.42	1.22	1198	5.98	108.0	18.4	

Sampling		Purging / Sampling Comments	
Date/Time: 22/11/18 Start 12:28 Finish 12:45		Recharge Ability (circle): Good (2-6 CPM) Average (1 CPM) Poor (<1 CPM)	
Sampling Method (bailer, low flow, other): MICROPURGE		Air Bubbles in Vials? Y/N	Other Comments:
SWL at end of Sampling: 3.42 m bTOC		Reaction with Preservatives? Y/N	
Sample No:	No. & Volume of Sample Containers (filtered/unfiltered):	QA/QC & Lab:	Headspace PID Readings:
	SVOcs (F/U/F): VOC: Metals (F/U/F): Cr(VI):	Y / N, ALS / MGT	Any Odours During Sampling?
	Sulphide: Pres Inorganics (F/U/F): Cyanide (F/U/F):	Y / N, ALS / MGT	NO
	Inorganics: Ferrous Iron: Other:	Y / N, ALS / MGT	
Waste Disposal (circle): Drums, Stormwater, Sewer, Surface, Trade Waste		^g Purge Volume = [TD (mbTOC)-SWL (mbTOC)] x [(D (mm))/2] ² x 0.00314 (only relevant when purging using non-low flow method) [*] Parameters considered stable when three consecutive readings three to five minutes apart are all within stated criteria (EPA Pub 669) ^{**} If using galvanic DO probe (yellow cap), highest DO reading during discharge should be recorded. [^] Or sensor accuracy, whichever is greater. YSI ProPlus sensor accuracy is 0.2 mg/L.	
Authorisation			
Sampled By: S O'CONNOR	Signature:		
Checked By:	Signature:		

Equipment Calibration Form

YSI ProPlus



Enqip #: 7961
Company: Senversa
Consultant: Sam O'Connor
PO #: M17003
Certificate #: 10667

INSTRUMENT IDENTIFICATION

Model Number: 6050000
Serial Number: 16E100254
Instrument Type: YSI ProPlus

INSPECTION RECORD

Batteries Checked: PASS **Date & Time:** PASS
Electrodes Cleaned/Checked: PASS **Temperature:** PASS

CALIBRATION DETAILS

Sensor	Cal Solution	Value	Reading
pH	Buffer 4.00	4.00 pH	4.00 pH
	Buffer 7.00	7.00 pH	7.00 pH
Redox	Standard ORP	234.5 mV @ 20 °C	234.5 mV
O ₂	Zero Dissolved Oxygen	0.0 %	0 %
	Air	100.0 %	100 %
Conductivity	Standard Conductivity	2.76 mS/cm	2.76 mS/cm

Calibration Successful: YES

Calibrated By: Doyle Schapendonk

Test Date: 21/11/2018



116 Thistlethwaite St, South Melbourne 3205
P 1300 218 987

E info@enqip.com.au | W www.enqip.com.au

Instrument Quality Report

Interface Meter



Enqip #: 7961
Company: Senversa
Consultant: Sam O'Connor
PO #: M17003
Certificate #: 10668

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: SOL122-58

INSPECTION RECORD

Battery:	PASS	Water Tone:	PASS
Tape Condition:	PASS	Hydrocarbon Tone:	PASS

Tested By: Darrin Arthur

Test Date: 21/11/2018



116 Thistlethwaite St, South Melbourne 3205
P 1300 218 987

E info@enqip.com.au | W www.enqip.com.au

Senversa PID Calibration Log

Project No:	M7003	Project:	COFF Balcraig
PID Unit Type:	MINIRAE3000	Regulator Model No:	/
Model No:		Serial No:	/

Unit power on	Yes / No	Date/time correct	Yes / No
Fully charged	Yes / No	Pump working	Yes / No
Alarm functioning	Yes / No	Backlight functioning	Yes / No
Filter clean	Yes / No	Inlet flow clear	Yes / No

Calibration start time	Span Gas	Value	Calibration end time	Reading
PID	Air	0.0 ppm		
	Isobutylene	100 ppm		106.7

Comments	BUMP TEST ONLY

Calibration Successful: Yes / No
 Calibration Date: 23/4/2018
 Calibrated By: SDC



Appendix N: Laboratory Certificates



Chain of Custody Documentation

Senversa Pty Ltd

WWW.SENVERSA.COM.AU

ABN 89 132 231 360

Laboratory: mg/Eurofins VIC
 3-5 Kingston Town Close, Oakleigh
 Contact: Mary Makarios / Sample Log in
 Phone: 03 9564 7055

Job Number:	M17003	Purchase Order:	
Project Name:	Delayed Site Investigation	Quote No:	
Sampled By:	Sam O'Connor	Turn Around Time:	Standard
Project Manager:	Sam O'Connor	Page:	1 of 1
Email Report To:	sam.oconnor@senversa.com.au	Phone/Mobile:	0435 595 322

Sample Information	Container Information	Analysis Required				Comments											
Lab ID	Sample ID	Matrix *	Date	Time	Type / Code	Total Bottles	VOC/SVOC (SVV)	TDS	NEPM Metals (M13)	Nitrate, ammonia							
	MMW01	Water	22/11/2018				X	X	X	X							
	MMW02	Water	22/11/2018				X	X	X	X							
	QA1	Water	22/11/2018				X	X	X	X							
	QA2	Water	22/11/2018				X	X	X	X							

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples.

Retinquished By: Sam O'Connor Method of Shipment (if applicable): Carrier / Reference #: Sam O'Connor Signature: [Signature] Date: 22/11/2018

Name/Signature: [Signature] Date: 22/11/18 Carrier / Reference #: [Signature] Received by: [Signature] Date: 22/11/18
 Of: [Signature] Date: [Signature] Carrier / Reference #: [Signature] Name/Signature: [Signature] Date: 21/11/18
 Of: [Signature] Date: [Signature] Carrier / Reference #: [Signature] Name/Signature: [Signature] Date: 21/11/18
 Of: [Signature] Date: [Signature] Carrier / Reference #: [Signature] Name/Signature: [Signature] Date: 21/11/18

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO₃) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; USA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW = sulfuric acid preserved wide mouth glass jar

Completed by: _____
 Checked by: _____
 629482
 COC_M17003_20181122 (2)

Sample Receipt Advice

Company name: **Senversa Pty Ltd VIC**
Contact name: **Samuel O'Connor**
Project name: **DETAILED SITE INVESTIGATION**
Project ID: **M17003**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 22, 2018 3:50 PM**
Eurofins | mgt reference: **629482**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 1.3 degrees Celsius.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Mary Makarios on Phone : +61 3 8564 5000 or by e.mail: MaryMakarios@eurofins.com

Results will be delivered electronically via e.mail to Samuel O'Connor - samuel.o'connor@senversa.com.au.

Company Name: Senversa Pty Ltd VIC	Order No.:	Received: Nov 22, 2018 3:50 PM
Address: Level 6, 15 Williams St Melbourne VIC 3000	Report #: 629482	Due: Nov 29, 2018
	Phone: 9606 0070	Priority: 5 Day
	Fax:	Contact Name: Samuel O'Connor
Project Name: DETAILED SITE INVESTIGATION		
Project ID: M17003		

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Ammonia (as N)	Nitrate (as N)	Total Dissolved Solids	NEPM 2013 Metals : Metals M13 filtered	Eurofins mgt Suite SVV: SVOCVOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	MW01	Nov 22, 2018		Water	M18-No32309	X	X	X	X	X
2	MW02	Nov 22, 2018		Water	M18-No32310	X	X	X	X	X
3	QA1	Nov 22, 2018		Water	M18-No32311	X	X	X	X	X
Test Counts						3	3	3	3	3

Senversa Pty Ltd VIC
Level 6, 15 Williams St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Samuel O'Connor

Report 629482-W
Project name DETAILED SITE INVESTIGATION
Project ID M17003
Received Date Nov 22, 2018

Client Sample ID			MW01 Water M18-No32309 Nov 22, 2018	MW02 Water M18-No32310 Nov 22, 2018	QA1 Water M18-No32311 Nov 22, 2018
Sample Matrix					
Eurofins mgt Sample No.					
Date Sampled					
Test/Reference	LOR	Unit			
Volatile Organics					
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001	< 0.001	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001

Client Sample ID			MW01	MW02	QA1
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M18-No32309	M18-No32310	M18-No32311
Date Sampled			Nov 22, 2018	Nov 22, 2018	Nov 22, 2018
Test/Reference	LOR	Unit			
Volatile Organics					
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Styrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
Total MAH*	0.003	mg/L	< 0.003	< 0.003	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005
4-Bromofluorobenzene (surr.)	1	%	87	66	73
Toluene-d8 (surr.)	1	%	87	66	76
Semivolatile Organics					
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03
1-Chloronaphthalene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1-Naphthylamine	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2.3-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2.3.4-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2.3.5-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2.4-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.2.4.5-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.3-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.3.5-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
1.4-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
2-Chloronaphthalene	0.005	mg/L	< 0.005	< 0.005	< 0.005
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003
2-Methylnaphthalene	0.005	mg/L	< 0.005	< 0.005	< 0.005
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003
2-Naphthylamine	0.005	mg/L	< 0.005	< 0.005	< 0.005
2-Nitroaniline	0.005	mg/L	< 0.005	< 0.005	< 0.005
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
2-Picoline	0.005	mg/L	< 0.005	< 0.005	< 0.005
2.3.4.6-Tetrachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03
2.4-Dinitrotoluene	0.005	mg/L	< 0.005	< 0.005	< 0.005

Client Sample ID			MW01	MW02	QA1
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M18-No32309	M18-No32310	M18-No32311
Date Sampled			Nov 22, 2018	Nov 22, 2018	Nov 22, 2018
Test/Reference	LOR	Unit			
Semivolatile Organics					
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003
2.6-Dinitrotoluene	0.005	mg/L	< 0.005	< 0.005	< 0.005
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006
3-Methylcholanthrene	0.005	mg/L	< 0.005	< 0.005	< 0.005
3.3'-Dichlorobenzidine	0.005	mg/L	< 0.005	< 0.005	< 0.005
4-Aminobiphenyl	0.005	mg/L	< 0.005	< 0.005	< 0.005
4-Bromophenyl phenyl ether	0.005	mg/L	< 0.005	< 0.005	< 0.005
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
4-Chlorophenyl phenyl ether	0.005	mg/L	< 0.005	< 0.005	< 0.005
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03
4.4'-DDD	0.005	mg/L	< 0.005	< 0.005	< 0.005
4.4'-DDE	0.005	mg/L	< 0.005	< 0.005	< 0.005
4.4'-DDT	0.005	mg/L	< 0.005	< 0.005	< 0.005
7.12-Dimethylbenz(a)anthracene	0.005	mg/L	< 0.005	< 0.005	< 0.005
a-BHC	0.005	mg/L	< 0.005	< 0.005	< 0.005
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Acetophenone	0.005	mg/L	< 0.005	< 0.005	< 0.005
Aldrin	0.005	mg/L	< 0.005	< 0.005	< 0.005
Aniline	0.005	mg/L	< 0.005	< 0.005	< 0.005
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
b-BHC	0.005	mg/L	< 0.005	< 0.005	< 0.005
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzyl chloride	0.005	mg/L	< 0.005	< 0.005	< 0.005
Bis(2-chloroethoxy)methane	0.005	mg/L	< 0.005	< 0.005	< 0.005
Bis(2-chloroisopropyl)ether	0.005	mg/L	< 0.005	< 0.005	< 0.005
Bis(2-ethylhexyl)phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Butyl benzyl phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001
d-BHC	0.005	mg/L	< 0.005	< 0.005	< 0.005
Di-n-butyl phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Di-n-octyl phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibenz(a,j)acridine	0.005	mg/L	< 0.005	< 0.005	< 0.005
Dibenzofuran	0.005	mg/L	< 0.005	< 0.005	< 0.005
Dieldrin	0.005	mg/L	< 0.005	< 0.005	< 0.005
Diethyl phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Dimethyl phthalate	0.005	mg/L	< 0.005	< 0.005	< 0.005
Dimethylaminoazobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Diphenylamine	0.005	mg/L	< 0.005	< 0.005	< 0.005
Endosulfan I	0.005	mg/L	< 0.005	< 0.005	< 0.005
Endosulfan II	0.005	mg/L	< 0.005	< 0.005	< 0.005
Endosulfan sulphate	0.005	mg/L	< 0.005	< 0.005	< 0.005

Client Sample ID			MW01	MW02	QA1
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M18-No32309	M18-No32310	M18-No32311
Date Sampled			Nov 22, 2018	Nov 22, 2018	Nov 22, 2018
Test/Reference	LOR	Unit			
Semivolatile Organics					
Endrin	0.005	mg/L	< 0.005	< 0.005	< 0.005
Endrin aldehyde	0.005	mg/L	< 0.005	< 0.005	< 0.005
Endrin ketone	0.005	mg/L	< 0.005	< 0.005	< 0.005
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001
g-BHC (Lindane)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Heptachlor	0.005	mg/L	< 0.005	< 0.005	< 0.005
Heptachlor epoxide	0.005	mg/L	< 0.005	< 0.005	< 0.005
Hexachlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Hexachlorobutadiene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Hexachlorocyclopentadiene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Hexachloroethane	0.005	mg/L	< 0.005	< 0.005	< 0.005
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Methoxychlor	0.005	mg/L	< 0.005	< 0.005	< 0.005
N-Nitrosodibutylamine	0.005	mg/L	< 0.005	< 0.005	< 0.005
N-Nitrosodipropylamine	0.005	mg/L	< 0.005	< 0.005	< 0.005
N-Nitrosopiperidine	0.005	mg/L	< 0.005	< 0.005	< 0.005
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Nitrobenzene	0.05	mg/L	< 0.05	< 0.05	< 0.05
Pentachlorobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Pentachloronitrobenzene	0.005	mg/L	< 0.005	< 0.005	< 0.005
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003
Pronamide	0.005	mg/L	< 0.005	< 0.005	< 0.005
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Trifluralin	0.005	mg/L	< 0.005	< 0.005	< 0.005
Phenol-d6 (surr.)	1	%	int	69	int
Nitrobenzene-d5 (surr.)	1	%	99	131	102
2-Fluorobiphenyl (surr.)	1	%	66	93	133
2.4.6-Tribromophenol (surr.)	1	%	61	140	82
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	< 0.01
Chromium (hexavalent)					
Chromium (hexavalent)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	3.8	3.4	3.5
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	930	680	640
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Boron (filtered)	0.05	mg/L	0.11	0.13	0.12
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Cobalt (filtered)	0.001	mg/L	0.003	0.002	0.002
Copper (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	0.18	0.090	0.084
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.005	0.007	0.006
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.061	0.055	0.034

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Melbourne	Nov 27, 2018	7 Days
Semivolatile Organics - Method: LTM-ORG-2190 SVOC in Water & Soil by GC-MS	Melbourne	Nov 28, 2018	7 Day
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Nov 27, 2018	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Nov 27, 2018	28 Day
Total Dissolved Solids - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Nov 27, 2018	7 Day
Chromium (hexavalent) - Method: Cr (VI) by MGT 1170A	Melbourne	Nov 27, 2018	28 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Nov 27, 2018	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Nov 27, 2018	28 Day

Company Name: Senversa Pty Ltd VIC	Order No.:	Received: Nov 22, 2018 3:50 PM
Address: Level 6, 15 Williams St Melbourne VIC 3000	Report #: 629482	Due: Nov 29, 2018
	Phone: 9606 0070	Priority: 5 Day
	Fax:	Contact Name: Samuel O'Connor
Project Name: DETAILED SITE INVESTIGATION		
Project ID: M17003		

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Ammonia (as N)	Nitrate (as N)	Total Dissolved Solids	NEPM 2013 Metals : Metals M13 filtered	Eurofins mgt Suite SVV: SVO/CV/OC
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	MW01	Nov 22, 2018		Water	M18-No32309	X	X	X	X	X
2	MW02	Nov 22, 2018		Water	M18-No32310	X	X	X	X	X
3	QA1	Nov 22, 2018		Water	M18-No32311	X	X	X	X	X
Test Counts						3	3	3	3	3

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Benzene	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3,5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2,3,4,6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2,4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2,4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3,3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4,4'-DDD	mg/L	< 0.005			0.005	Pass	
4,4'-DDE	mg/L	< 0.005			0.005	Pass	
4,4'-DDT	mg/L	< 0.005			0.005	Pass	
7,12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nitrate (as N)	mg/L	< 0.02		0.02	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
Method Blank						
Heavy Metals						
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001		0.001	Pass	
Boron (filtered)	mg/L	< 0.05		0.05	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Cobalt (filtered)	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.005		0.005	Pass	
LCS - % Recovery						
Volatile Organics						
1.1-Dichloroethene	%	103		70-130	Pass	
1.1.1-Trichloroethane	%	100		70-130	Pass	
1.2-Dichlorobenzene	%	110		70-130	Pass	
1.2-Dichloroethane	%	90		70-130	Pass	
Benzene	%	111		70-130	Pass	
Ethylbenzene	%	117		70-130	Pass	
m&p-Xylenes	%	112		70-130	Pass	
Toluene	%	111		70-130	Pass	
Trichloroethene	%	103		70-130	Pass	
Xylenes - Total	%	113		70-130	Pass	
LCS - % Recovery						
Semivolatile Organics						
1.2.3-Trichlorobenzene	%	79		75-125	Pass	
1.2.4-Trichlorobenzene	%	88		70-130	Pass	
1.4-Dichlorobenzene	%	84		70-130	Pass	
2-Chlorophenol	%	99		30-130	Pass	
2.4-Dinitrotoluene	%	113		70-130	Pass	
4-Chloro-3-methylphenol	%	80		30-130	Pass	
N-Nitrosodipropylamine	%	107		70-130	Pass	
Pentachlorophenol	%	74		30-130	Pass	
Phenol	%	51		30-130	Pass	
Pyrene	%	104		70-130	Pass	
LCS - % Recovery						
Ammonia (as N)	%	100		70-130	Pass	
Chromium (hexavalent)	%	121		70-130	Pass	
Nitrate (as N)	%	100		70-130	Pass	
Total Dissolved Solids	%	90		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Arsenic (filtered)	%	91		80-120	Pass	
Boron (filtered)	%	101		80-120	Pass	
Cadmium (filtered)	%	95		80-120	Pass	
Cobalt (filtered)	%	92		80-120	Pass	
Copper (filtered)	%	92		80-120	Pass	
Lead (filtered)	%	92		80-120	Pass	
Manganese (filtered)	%	92		80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury (filtered)			%	95			70-130	Pass	
Nickel (filtered)			%	93			80-120	Pass	
Selenium (filtered)			%	91			80-120	Pass	
Zinc (filtered)			%	92			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Semivolatile Organics				Result 1					
1.2.4-Trichlorobenzene	S18-No25734	NCP	%	128			70-130	Pass	
1.4-Dichlorobenzene	S18-No25734	NCP	%	106			70-130	Pass	
2-Chlorophenol	S18-No25734	NCP	%	112			30-130	Pass	
2-Methylnaphthalene	M18-No25829	NCP	%	71			70-130	Pass	
2-Nitrophenol	M18-No25829	NCP	%	96			30-130	Pass	
2.4-Dichlorophenol	M18-No25829	NCP	%	88			30-130	Pass	
2.4-Dimethylphenol	M18-No25829	NCP	%	86			30-130	Pass	
2.4-Dinitrotoluene	S18-No25734	NCP	%	99			70-130	Pass	
2.4.5-Trichlorophenol	M18-No25829	NCP	%	130			30-130	Pass	
2.4.6-Trichlorophenol	M18-No25829	NCP	%	105			30-130	Pass	
2.6-Dichlorophenol	M18-No25829	NCP	%	96			30-130	Pass	
4-Chloro-3-methylphenol	S18-No25734	NCP	%	118			30-130	Pass	
Acenaphthene	S18-No25734	NCP	%	95			70-130	Pass	
N-Nitrosodipropylamine	S18-No25734	NCP	%	82			70-130	Pass	
Naphthalene	M18-No25829	NCP	%	109			70-130	Pass	
Pentachlorophenol	S18-No25734	NCP	%	81			30-130	Pass	
Phenol	S18-No25734	NCP	%	69			30-130	Pass	
Pyrene	S18-No25734	NCP	%	77			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M18-No35843	NCP	%	101			70-130	Pass	
Nitrate (as N)	M18-No35843	NCP	%	101			70-130	Pass	
Spike - % Recovery									
				Result 1					
Heavy Metals									
Arsenic (filtered)	M18-No32309	CP	%	95			70-130	Pass	
Beryllium (filtered)	M18-No32309	CP	%	99			75-125	Pass	
Boron (filtered)	M18-No32309	CP	%	112			75-125	Pass	
Cadmium (filtered)	M18-No32309	CP	%	97			70-130	Pass	
Cobalt (filtered)	M18-No32309	CP	%	92			75-125	Pass	
Copper (filtered)	M18-No32309	CP	%	92			70-130	Pass	
Lead (filtered)	M18-No32309	CP	%	92			70-130	Pass	
Manganese (filtered)	M18-No32309	CP	%	98			70-130	Pass	
Mercury (filtered)	M18-No32309	CP	%	75			70-130	Pass	
Nickel (filtered)	M18-No32309	CP	%	92			70-130	Pass	
Selenium (filtered)	M18-No32309	CP	%	99			70-130	Pass	
Zinc (filtered)	M18-No32309	CP	%	96			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Benzene	S18-No30361	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S18-No30361	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S18-No30361	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S18-No30361	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S18-No30361	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S18-No30361	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2-Methyl-4,6-dinitrophenol	S18-No25733	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
1-Chloronaphthalene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1-Naphthylamine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2-Dichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3-Trichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4-Trichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3-Dichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3,5-Trichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,4-Dichlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chloronaphthalene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chlorophenol	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Methylnaphthalene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Methylphenol (o-Cresol)	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Naphthylamine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitroaniline	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitrophenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Picoline	M18-No25828	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,3,4,6-Tetrachlorophenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dichlorophenol	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dimethylphenol	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dinitrophenol	S18-No25733	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2,4-Dinitrotoluene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,4,5-Trichlorophenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4,6-Trichlorophenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,6-Dichlorophenol	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,6-Dinitrotoluene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	S18-No25733	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass
3-Methylcholanthrene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3,3'-Dichlorobenzidine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Aminobiphenyl	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Bromophenyl phenyl ether	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Chloro-3-methylphenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Chlorophenyl phenyl ether	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Nitrophenol	S18-No25733	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
4,4'-DDD	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDE	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDT	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
7,12-Dimethylbenz(a)anthracene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
a-BHC	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Acenaphthene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acetophenone	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aldrin	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aniline	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Anthracene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
b-BHC	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Benz(a)anthracene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
Benzyl chloride	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroethoxy)methane	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroisopropyl)ether	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-ethylhexyl)phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Butyl benzyl phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chrysene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
d-BHC	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-butyl phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-octyl phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenz(a,h)anthracene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,j)acridine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenzofuran	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dieldrin	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diethyl phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethyl phthalate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethylaminoazobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diphenylamine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan I	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan II	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan sulphate	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin aldehyde	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin ketone	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Fluoranthene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
g-BHC (Lindane)	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor epoxide	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobutadiene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorocyclopentadiene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachloroethane	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Methoxychlor	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodibutylamine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodipropylamine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosopiperidine	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Naphthalene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nitrobenzene	S18-No25733	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Pentachlorobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachloronitrobenzene	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachlorophenol	S18-No25733	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Phenanthrene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenol	S18-No25733	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Pronamide	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pyrene	S18-No25733	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trifluralin	S18-No25733	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M18-No35843	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate (as N)	M18-No35843	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M18-No32309	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Beryllium (filtered)	M18-No32309	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Boron (filtered)	M18-No32309	CP	mg/L	0.11	0.11	1.0	30%	Pass
Cadmium (filtered)	M18-No32309	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Cobalt (filtered)	M18-No32309	CP	mg/L	0.003	0.003	1.0	30%	Pass
Copper (filtered)	M18-No32309	CP	mg/L	0.004	0.004	1.0	30%	Pass
Lead (filtered)	M18-No32309	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M18-No32309	CP	mg/L	0.18	0.18	1.0	30%	Pass
Mercury (filtered)	M18-No32309	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M18-No32309	CP	mg/L	0.005	0.005	2.0	30%	Pass
Selenium (filtered)	M18-No32309	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M18-No32309	CP	mg/L	0.061	0.061	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M18-No32311	CP	mg/L	640	630	1.0	30%	Pass

Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Mary Makarios	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)



Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Enviro Sample Vic

From: Samuel O'Connor <sam.oconnor@senversa.com.au>
Sent: Friday, 23 November 2018 4:05 PM
To: Mary Makarios
Cc: Enviro Sample Vic; Richard Griffin
Subject: COC for M17003 Soils (1 x esky)
Attachments: image001.png; COC_M17003_20181123.xlsx

Follow Up Flag: Follow up
Flag Status: Completed

Hello Mary,

Please find attached COC for 1 x esky of soils sent to lab today.

Cheers,

Sam

Sam O'Connor
Environmental Scientist



senversa

Senversa Pty Ltd
Level 6, 15 William Street, Melbourne VIC 3000

m: +61 435 595 322 | e: samuel.oconnor@senversa.com.au
t: +61 3 9606 0070 | w: www.senversa.com.au

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<http://www.mailguard.com.au/mg>

Senversa Pty Ltd
 www.senversaltd.com.au
 ABN 69 132 231 380

Laboratory: mg/Eurofins VIC
 3-5 Kingston Town Close, Oakleigh
 Contact: Mary Makarios / Sample Log in
 Phone: 03 9564 7055

Job Number: M17003

Purchase Order:

Project Name: Detailed Site Investigation

Quote No:

Sampled By: Sam O'Connor

Turn Around Time: Standard

Project Manager: Sam O'Connor

Page: 1 of 1

Email Report To: sam.oconnor@senversaltd.com.au

Phone/Mobile: 0435 595 322

Lab ID	Sample ID	Matrix *	Date	Time	Type / Code	Total Bottles	Container Information		Analysis Required		Comments: e.g. Highly contaminated sample, hazardous materials present, trace LOQS etc.
							Carrier / Reference #	Carrier / Reference #	WRG 621 suite	WRG 621 metals (M12), TRH, PAHs	
	SB01_0.4-0.5	Soil	23/1/2018			1 x Jar					
	SB01_0.9-1.0	Soil	23/1/2018			1 x Jar					
	SB02_0.4-0.5	Soil	23/1/2018			1 x Jar					
	SB02_1.0-1.1	Soil	23/1/2018			1 x Jar					
	SB03_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB03_0.3-0.4	Soil	23/1/2018			1 x Jar					
	SB03_1.1-1.2	Soil	23/1/2018			1 x Jar					
	SB04_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB04_0.5-0.6	Soil	23/1/2018			1 x Jar					
	SB04_1.4-1.5	Soil	23/1/2018			1 x Jar					
	SB05_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB05_0.7-0.8	Soil	23/1/2018			1 x Jar					
	SB06_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB06_0.7-0.8	Soil	23/1/2018			1 x Jar					
	SB06_1.4-1.5	Soil	23/1/2018			1 x Jar					
	SB07_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB07_0.7-0.8	Soil	23/1/2018			1 x Jar					
	SB07_1.0-1.1	Soil	23/1/2018			1 x Jar					
	SB08_0.2-0.3	Soil	23/1/2018			1 x Jar					
	SB08_0.4-0.6	Soil	23/1/2018			1 x Jar					
	SB08_1.4-1.5	Soil	23/1/2018			1 x Jar					
	OA1	Soil	23/1/2018			1 x Jar					
	OA2	Soil	23/1/2018			1 x Jar					
	Rinsate	Water	23/1/2018			Various					

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples. Sampler Name: Sam O'Connor Signature: _____ Date: 23/1/2018

Relinquished By: Sam O'Connor Method of Shipment (if applicable): _____ Received by: _____ Date: _____

Name/Signature: _____ Date: 23/1/18 Carrier / Reference #: _____ Date/Time: _____ Name/Signature: _____ Date: _____

Name/Signature: _____ Date: _____ Carrier / Reference #: _____ Date/Time: _____ Name/Signature: _____ Date: _____

Name/Signature: _____ Date: _____ Carrier / Reference #: _____ Date/Time: _____ Name/Signature: _____ Date: _____

Name/Signature: _____ Date: _____ Carrier / Reference #: _____ Date/Time: _____ Name/Signature: _____ Date: _____

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO3) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydrochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L = Lugol's iodine preserved white plastic bottle; SW = sulfuric acid preserved wide mouth glass jar

Sample Receipt Advice

Company name: **Senversa Pty Ltd VIC**
Contact name: **Samuel O'Connor**
Project name: **DETAILED SITE INVESTIGATION**
Project ID: **M17003**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 23, 2018 4:05 PM**
Eurofins | mgt reference: **629544**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 12.6 degrees Celsius.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Mary Makarios on Phone : +61 3 8564 5000 or by e.mail: MaryMakarios@eurofins.com

Results will be delivered electronically via e.mail to Samuel O'Connor - samuel.o'connor@senversa.com.au.

Company Name: Senversa Pty Ltd VIC
Address: Level 6, 15 Williams St
Melbourne
VIC 3000

Order No.:
Report #: 629544
Phone: 9606 0070
Fax:

Received: Nov 23, 2018 4:05 PM
Due: Nov 30, 2018
Priority: 5 Day
Contact Name: Samuel O'Connor

Project Name: DETAILED SITE INVESTIGATION
Project ID: M17003

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polyyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	SB01_0.4-0.5	Nov 23, 2018		Soil	M18-No33147		X	X	X	X	
2	SB01_0.9-1.0	Nov 23, 2018		Soil	M18-No33148		X	X	X	X	
3	SB02_0.4-0.5	Nov 23, 2018		Soil	M18-No33149		X	X	X	X	
4	SB03_0.2-0.3	Nov 23, 2018		Soil	M18-No33150		X	X	X	X	
5	SB03_0.3-0.4	Nov 23, 2018		Soil	M18-No33151				X		X
6	SB04_0.2-0.3	Nov 23, 2018		Soil	M18-No33152		X	X	X	X	
7	SB05_0.2-0.3	Nov 23, 2018		Soil	M18-No33153				X		X
8	SB05_0.7-0.8	Nov 23, 2018		Soil	M18-No33154		X	X	X	X	
9	SB06_0.2-0.3	Nov 23, 2018		Soil	M18-No33155				X		X

Company Name: Senversa Pty Ltd VIC
Address: Level 6, 15 Williams St
Melbourne
VIC 3000

Order No.:
Report #: 629544
Phone: 9606 0070
Fax:

Received: Nov 23, 2018 4:05 PM
Due: Nov 30, 2018
Priority: 5 Day
Contact Name: Samuel O'Connor

Project Name: DETAILED SITE INVESTIGATION
Project ID: M17003

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polyyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
10	SB06_0.7-0.8	Nov 23, 2018		Soil	M18-No33156		X	X	X	X	
11	SB07_0.2-0.3	Nov 23, 2018		Soil	M18-No33157		X	X	X	X	
12	SB07_0.7-0.8	Nov 23, 2018		Soil	M18-No33158				X		X
13	SB07_1.0-1.1	Nov 23, 2018		Soil	M18-No33159		X	X	X	X	
14	SB08_0.2-0.3	Nov 23, 2018		Soil	M18-No33160		X	X	X	X	
15	SB08_0.4-0.6	Nov 23, 2018		Soil	M18-No33161		X	X	X	X	
16	SB08_1.4-1.5	Nov 23, 2018		Soil	M18-No33162		X	X	X	X	
17	QA1	Nov 23, 2018		Soil	M18-No33163		X	X	X	X	
18	SB02_1.0-1.1	Nov 23, 2018		Soil	M18-No33164	X					
19	SB03_1.1-1.2	Nov 23, 2018		Soil	M18-No33165	X					
20	SB04_0.5-0.6	Nov 23, 2018		Soil	M18-No33166	X					
21	SB04_1.4-1.5	Nov 23, 2018		Soil	M18-No33167	X					

Company Name:	Senversa Pty Ltd VIC	Order No.:		Received:	Nov 23, 2018 4:05 PM
Address:	Level 6, 15 Williams St Melbourne VIC 3000	Report #:	629544	Due:	Nov 30, 2018
Project Name:	DETAILED SITE INVESTIGATION	Phone:	9606 0070	Priority:	5 Day
Project ID:	M17003	Fax:		Contact Name:	Samuel O'Connor

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polycyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
22	SB06_1.4-1.5	Nov 23, 2018		Soil	M18-No33168	X					
23	RINSATE	Nov 23, 2018		Water	M18-No33169	X					
Test Counts						6	13	13	17	13	4

Senversa Pty Ltd VIC
 Level 6, 15 Williams St
 Melbourne
 VIC 3000



NATA Accredited
 Accreditation Number 1261
 Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: Samuel O'Connor

Report **629544-S**
 Project name DETAILED SITE INVESTIGATION
 Project ID M17003
 Received Date Nov 23, 2018

Client Sample ID			SB01_0.4-0.5	SB01_0.9-1.0	SB02_0.4-0.5	SB03_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33147	M18-No33148	M18-No33149	M18-No33150
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	400
TRH C29-C36	50	mg/kg	< 50	< 50	82	930
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	82	1330
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	110	1400
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	150
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	110	1550
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SB01_0.4-0.5	SB01_0.9-1.0	SB02_0.4-0.5	SB03_0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33147	M18-No33148	M18-No33149	M18-No33150
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
2-Fluorobiphenyl (surr.)	1	%	91	100	83	83
p-Terphenyl-d14 (surr.)	1	%	144	79	85	80
% Moisture						
	1	%	2.9	15	4.2	1.3
Heavy Metals						
Arsenic	2	mg/kg	< 2	6.2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	29	25	10
Copper	5	mg/kg	30	6.4	39	17
Lead	5	mg/kg	10	8.0	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5	< 5	< 5
Nickel	5	mg/kg	130	20	110	35
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tin	10	mg/kg	< 10	< 10	< 10	< 10
Zinc	5	mg/kg	73	11	58	25

Client Sample ID			SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33151	M18-No33152	M18-No33153	M18-No33154
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	290	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	960	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	1250	< 50	< 50
Volatile Organics						
1,2,4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	< 0.5	-
Volatile Organics						
1,1-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,1-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
1,1,1-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,1,1,2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,1,2-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,1,2,2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2-Dibromoethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2,3-Trichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,2,4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1,3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1,3-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1,3,5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33151	M18-No33152	M18-No33153	M18-No33154
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Volatile Organics						
1,4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	< 0.5	-
Allyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Bromobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromoform	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroform	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1,2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1,3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Iodomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Styrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
trans-1,2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
trans-1,3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
Total MAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	109	-	117	-
Toluene-d8 (surr.)	1	%	100	-	109	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33151	M18-No33152	M18-No33153	M18-No33154
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C16-C34	100	mg/kg	< 100	1200	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	110	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	1310	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	77	83	81	80
p-Terphenyl-d14 (surr.)	1	%	95	97	124	113
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-

Client Sample ID			SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33151	M18-No33152	M18-No33153	M18-No33154
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	54	-	86	-
Tetrachloro-m-xylene (surr.)	1	%	103	-	100	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	54	-	86	-
Tetrachloro-m-xylene (surr.)	1	%	103	-	100	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2,4,5-Trichlorophenol	1	mg/kg	< 1	-	< 1	-
2,4,6-Trichlorophenol	1	mg/kg	< 1	-	< 1	-
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	< 1	-
Pentachlorophenol	1	mg/kg	< 1	-	< 1	-
Tetrachlorophenols - Total	1	mg/kg	< 1	-	< 1	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	< 1	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20	-	< 20	-
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	< 0.2	-
2-Nitrophenol	1.0	mg/kg	< 1	-	< 1	-
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2,4-Dinitrophenol	5	mg/kg	< 5	-	< 5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	< 0.4	-
4-Nitrophenol	5	mg/kg	< 5	-	< 5	-
Dinoseb	20	mg/kg	< 20	-	< 20	-
Phenol	0.5	mg/kg	< 0.5	-	< 0.5	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	< 20	-
Phenol-d6 (surr.)	1	%	47	-	84	-
Other Parameters						
Chromium (hexavalent)	1	mg/kg	< 1	-	< 1	-
Cyanide (total)	5	mg/kg	< 5	-	< 5	-
Fluoride	100	mg/kg	< 100	-	< 100	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	9.1	-	9.9	-
% Moisture	1	%	6.5	2.1	3.6	18

Client Sample ID			SB03_0.3-0.4	SB04_0.2-0.3	SB05_0.2-0.3	SB05_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33151	M18-No33152	M18-No33153	M18-No33154
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	60	< 2	5.9	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.0	< 5	8.4	39
Copper	5	mg/kg	< 5	9.2	5.9	5.4
Lead	5	mg/kg	41	< 5	44	9.6
Mercury	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5	< 5	< 5
Nickel	5	mg/kg	5.7	23	15	20
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tin	10	mg/kg	< 10	< 10	< 10	< 10
Zinc	5	mg/kg	25	21	79	15

Client Sample ID			SB06_0.2-0.3	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33155	M18-No33156	M18-No33157	M18-No33158
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 40	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	20	< 20
TRH C15-C28	50	mg/kg	440	< 50	430	< 50
TRH C29-C36	50	mg/kg	1200	< 50	1400	< 50
TRH C10-36 (Total)	50	mg/kg	1640	< 50	1850	< 50
Volatile Organics						
1,2,4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	< 0.5
Volatile Organics						
1,1-Dichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
1,1,1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,1,1,2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,1,2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,1,2,2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2,3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,2,4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1,3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1,3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	< 0.5
1,3,5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
1,4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			SB06_0.2-0.3	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33155	M18-No33156	M18-No33157	M18-No33158
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Volatile Organics						
Allyl chloride	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromoform	0.5	mg/kg	< 0.5	-	-	< 0.5
Bromomethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloroethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloroform	0.5	mg/kg	< 0.5	-	-	< 0.5
Chloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Iodomethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5	-	-	< 0.5
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Styrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	-	-	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	-	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5	-	-	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
Total MAH*	0.5	mg/kg	< 0.5	-	-	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	-	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Bromofluorobenzene (surr.)	1	%	95	-	-	117
Toluene-d8 (surr.)	1	%	94	-	-	116
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 1	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 40	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 40	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	1700	< 100	2000	< 100
TRH >C34-C40	100	mg/kg	330	< 100	430	< 100
TRH >C10-C40 (total)*	100	mg/kg	2030	< 100	2430	< 100

Client Sample ID			SB06_0.2-0.3	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33155	M18-No33156	M18-No33157	M18-No33158
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.7	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.3	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.4	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.3	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	6.1	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	80	75	84
p-Terphenyl-d14 (surr.)	1	%	99	111	98	99
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchloroendate (surr.)	1	%	73	-	-	52
Tetrachloro-m-xylene (surr.)	1	%	87	-	-	98

Client Sample ID			SB06_0.2-0.3	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33155	M18-No33156	M18-No33157	M18-No33158
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchloroendate (surr.)	1	%	73	-	-	52
Tetrachloro-m-xylene (surr.)	1	%	87	-	-	98
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1	-	-	< 1
2,4,6-Trichlorophenol	1	mg/kg	< 1	-	-	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	< 1
Pentachlorophenol	1	mg/kg	< 1	-	-	< 1
Tetrachlorophenols - Total	1	mg/kg	< 1	-	-	< 1
Total Halogenated Phenol*	1	mg/kg	< 1	-	-	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20	-	-	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1	-	-	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5	-	-	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	< 0.4
4-Nitrophenol	5	mg/kg	< 5	-	-	< 5
Dinoseb	20	mg/kg	< 20	-	-	< 20
Phenol	0.5	mg/kg	< 0.5	-	-	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-	< 20
Phenol-d6 (surr.)	1	%	93	-	-	85
Other Parameters						
Chromium (hexavalent)	1	mg/kg	< 1	-	-	< 1
Cyanide (total)	5	mg/kg	< 5	-	-	< 5
Fluoride	100	mg/kg	< 100	-	-	< 100
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	9.9	-	-	8.9
% Moisture	1	%	7.3	6.3	1.2	< 1
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	44	8.2	< 5
Copper	5	mg/kg	12	51	13	< 5
Lead	5	mg/kg	< 5	< 5	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5	< 5	< 5
Nickel	5	mg/kg	19	99	18	< 5
Selenium	2	mg/kg	< 2	< 2	< 2	< 2

Client Sample ID			SB06_0.2-0.3	SB06_0.7-0.8	SB07_0.2-0.3	SB07_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33155	M18-No33156	M18-No33157	M18-No33158
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Silver	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tin	10	mg/kg	< 10	< 10	< 10	< 10
Zinc	5	mg/kg	29	67	21	< 5

Client Sample ID			SB07_1.0-1.1	SB08_0.2-0.3	SB08_0.4-0.6	SB08_1.4-1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33159	M18-No33160	M18-No33161	M18-No33162
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	52	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	170	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	222	< 50	< 50
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	210	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	110	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	320	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	69	55	78	119
p-Terphenyl-d14 (surr.)	1	%	91	68	134	77
% Moisture						
	1	%	11	6.1	2.5	9.1

Client Sample ID			SB07_1.0-1.1	SB08_0.2-0.3	SB08_0.4-0.6	SB08_1.4-1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			M18-No33159	M18-No33160	M18-No33161	M18-No33162
Date Sampled			Nov 23, 2018	Nov 23, 2018	Nov 23, 2018	Nov 23, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	26	< 2	25	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	30	10	7.8	13
Copper	5	mg/kg	5.4	9.9	< 5	< 5
Lead	5	mg/kg	9.2	8.3	10	8.3
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5	< 5	< 5
Nickel	5	mg/kg	15	17	< 5	12
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tin	10	mg/kg	< 10	< 10	< 10	< 10
Zinc	5	mg/kg	9.5	39	42	20

Client Sample ID			QA1
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-No33163
Date Sampled			Nov 23, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5

Client Sample ID			QA1
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-No33163
Date Sampled			Nov 23, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	140
p-Terphenyl-d14 (surr.)	1	%	104
% Moisture			
	1	%	1.8
Heavy Metals			
Arsenic	2	mg/kg	< 2
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	< 5
Copper	5	mg/kg	< 5
Lead	5	mg/kg	12
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	< 5
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	37

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Nov 27, 2018	14 Day
Volatile Organics - Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS	Melbourne	Nov 27, 2018	7 Day
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Melbourne	Nov 27, 2018	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Nov 27, 2018	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Nov 27, 2018	14 Day
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Nov 27, 2018	14 Day
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	Nov 27, 2018	14 Day
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	Nov 27, 2018	28 Days
Phenols (Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Nov 27, 2018	14 Days
Phenols (non-Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Nov 27, 2018	14 Day
Chromium (hexavalent) - Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)	Melbourne	Nov 27, 2018	28 Day
Cyanide (total) - Method: LTM-INO-4020 Total Free WAD Cyanide by CFA	Melbourne	Nov 27, 2018	14 Day
Fluoride - Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC	Melbourne	Nov 28, 2018	28 Day
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Melbourne	Nov 27, 2018	7 Day
Metals IWRG 621 : Metals M12 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Nov 27, 2018	28 Day
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Nov 24, 2018	14 Day

Company Name: Senversa Pty Ltd VIC	Order No.:	Received: Nov 23, 2018 4:05 PM
Address: Level 6, 15 Williams St Melbourne VIC 3000	Report #: 629544	Due: Nov 30, 2018
	Phone: 9606 0070	Priority: 5 Day
	Fax:	Contact Name: Samuel O'Connor
Project Name: DETAILED SITE INVESTIGATION		
Project ID: M17003		

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polyyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	SB01_0.4-0.5	Nov 23, 2018		Soil	M18-No33147		X	X	X	X	
2	SB01_0.9-1.0	Nov 23, 2018		Soil	M18-No33148		X	X	X	X	
3	SB02_0.4-0.5	Nov 23, 2018		Soil	M18-No33149		X	X	X	X	
4	SB03_0.2-0.3	Nov 23, 2018		Soil	M18-No33150		X	X	X	X	
5	SB03_0.3-0.4	Nov 23, 2018		Soil	M18-No33151				X		X
6	SB04_0.2-0.3	Nov 23, 2018		Soil	M18-No33152		X	X	X	X	
7	SB05_0.2-0.3	Nov 23, 2018		Soil	M18-No33153				X		X
8	SB05_0.7-0.8	Nov 23, 2018		Soil	M18-No33154		X	X	X	X	
9	SB06_0.2-0.3	Nov 23, 2018		Soil	M18-No33155				X		X

Company Name: Senversa Pty Ltd VIC	Order No.:	Received: Nov 23, 2018 4:05 PM
Address: Level 6, 15 Williams St Melbourne VIC 3000	Report #: 629544	Due: Nov 30, 2018
	Phone: 9606 0070	Priority: 5 Day
	Fax:	Contact Name: Samuel O'Connor
Project Name: DETAILED SITE INVESTIGATION		
Project ID: M17003		

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polyyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
10	SB06_0.7-0.8	Nov 23, 2018		Soil	M18-No33156		X	X	X	X	
11	SB07_0.2-0.3	Nov 23, 2018		Soil	M18-No33157		X	X	X	X	
12	SB07_0.7-0.8	Nov 23, 2018		Soil	M18-No33158				X		X
13	SB07_1.0-1.1	Nov 23, 2018		Soil	M18-No33159		X	X	X	X	
14	SB08_0.2-0.3	Nov 23, 2018		Soil	M18-No33160		X	X	X	X	
15	SB08_0.4-0.6	Nov 23, 2018		Soil	M18-No33161		X	X	X	X	
16	SB08_1.4-1.5	Nov 23, 2018		Soil	M18-No33162		X	X	X	X	
17	QA1	Nov 23, 2018		Soil	M18-No33163		X	X	X	X	
18	SB02_1.0-1.1	Nov 23, 2018		Soil	M18-No33164	X					
19	SB03_1.1-1.2	Nov 23, 2018		Soil	M18-No33165	X					
20	SB04_0.5-0.6	Nov 23, 2018		Soil	M18-No33166	X					
21	SB04_1.4-1.5	Nov 23, 2018		Soil	M18-No33167	X					

Company Name: Senversa Pty Ltd VIC	Order No.:	Received: Nov 23, 2018 4:05 PM
Address: Level 6, 15 Williams St Melbourne VIC 3000	Report #: 629544	Due: Nov 30, 2018
	Phone: 9606 0070	Priority: 5 Day
	Fax:	Contact Name: Samuel O'Connor
Project Name: DETAILED SITE INVESTIGATION		
Project ID: M17003		

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						HOLD	Polycyclic Aromatic Hydrocarbons	Metals IWRG 621 : Metals M12	Moisture Set	Total Recoverable Hydrocarbons	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
22	SB06_1.4-1.5	Nov 23, 2018		Soil	M18-No33168	X					
23	RINSATE	Nov 23, 2018		Water	M18-No33169	X					
Test Counts						6	13	13	17	13	4

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/kg	< 20		20	Pass	
TRH C10-C14	mg/kg	< 20		20	Pass	
TRH C15-C28	mg/kg	< 50		50	Pass	
TRH C29-C36	mg/kg	< 50		50	Pass	
Method Blank						
Volatile Organics						
1.2.4-Trichlorobenzene	mg/kg	< 0.5		0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5		0.5	Pass	
Method Blank						
Volatile Organics						
1.1-Dichloroethane	mg/kg	< 0.5		0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5		0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5		0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5		0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5		0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5		0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5		0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5		0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5		0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5		0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5		0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5		0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5		0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5		0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5		0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5		0.5	Pass	
Allyl chloride	mg/kg	< 0.5		0.5	Pass	
Benzene	mg/kg	< 0.1		0.1	Pass	
Bromobenzene	mg/kg	< 0.5		0.5	Pass	
Bromochloromethane	mg/kg	< 0.5		0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5		0.5	Pass	
Bromoform	mg/kg	< 0.5		0.5	Pass	
Bromomethane	mg/kg	< 0.5		0.5	Pass	
Carbon disulfide	mg/kg	< 0.5		0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5		0.5	Pass	
Chlorobenzene	mg/kg	< 0.5		0.5	Pass	
Chloroethane	mg/kg	< 0.5		0.5	Pass	
Chloroform	mg/kg	< 0.5		0.5	Pass	
Chloromethane	mg/kg	< 0.5		0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5		0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5		0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5		0.5	Pass	
Dibromomethane	mg/kg	< 0.5		0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5		0.5	Pass	
Ethylbenzene	mg/kg	< 0.1		0.1	Pass	
Iodomethane	mg/kg	< 0.5		0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	84			70-130	Pass	
TRH C10-C14	%	77			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
Benzene	%	102			70-130	Pass	
Ethylbenzene	%	84			70-130	Pass	
m&p-Xylenes	%	81			70-130	Pass	
Toluene	%	90			70-130	Pass	
Xylenes - Total	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	117			70-130	Pass	
TRH C6-C10	%	79			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	73			70-130	Pass	
Anthracene	%	72			70-130	Pass	
Benz(a)anthracene	%	72			70-130	Pass	
Benzo(a)pyrene	%	79			70-130	Pass	
Benzo(b&i)fluoranthene	%	77			70-130	Pass	
Benzo(g,h,i)perylene	%	81			70-130	Pass	
Benzo(k)fluoranthene	%	76			70-130	Pass	
Chrysene	%	81			70-130	Pass	
Dibenz(a,h)anthracene	%	83			70-130	Pass	
Fluoranthene	%	74			70-130	Pass	
Fluorene	%	79			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	79			70-130	Pass	
Naphthalene	%	83			70-130	Pass	
Phenanthrene	%	76			70-130	Pass	
Pyrene	%	73			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	85			70-130	Pass	
4,4'-DDE	%	71			70-130	Pass	
4,4'-DDT	%	77			70-130	Pass	
a-BHC	%	76			70-130	Pass	
Aldrin	%	74			70-130	Pass	
b-BHC	%	101			70-130	Pass	
d-BHC	%	113			70-130	Pass	
Dieldrin	%	99			70-130	Pass	
Endosulfan I	%	79			70-130	Pass	
Endosulfan II	%	74			70-130	Pass	
Endosulfan sulphate	%	87			70-130	Pass	
Endrin	%	118			70-130	Pass	
Endrin aldehyde	%	71			70-130	Pass	
Endrin ketone	%	75			70-130	Pass	
g-BHC (Lindane)	%	75			70-130	Pass	
Heptachlor	%	106			70-130	Pass	
Heptachlor epoxide	%	98			70-130	Pass	
Hexachlorobenzene	%	75			70-130	Pass	
Methoxychlor	%	76			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	88			30-130	Pass	
2,4-Dichlorophenol	%	104			30-130	Pass	
2,4,5-Trichlorophenol	%	124			30-130	Pass	
2,4,6-Trichlorophenol	%	124			30-130	Pass	
2,6-Dichlorophenol	%	77			30-130	Pass	
Pentachlorophenol	%	56			30-130	Pass	
Tetrachlorophenols - Total	%	38			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Methylphenol (o-Cresol)	%	96			30-130	Pass	
2-Nitrophenol	%	81			30-130	Pass	
2,4-Dimethylphenol	%	83			30-130	Pass	

Test				Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
3&4-Methylphenol (m&p-Cresol)				%	89		30-130	Pass	
4-Nitrophenol				%	51		30-130	Pass	
Dinoseb				%	30		30-130	Pass	
Phenol				%	94		30-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals					Result 1				
Arsenic	M18-No33153	CP	%	114			75-125	Pass	
Cadmium	M18-No33153	CP	%	107			75-125	Pass	
Chromium	M18-No33153	CP	%	76			75-125	Pass	
Copper	M18-No33153	CP	%	80			75-125	Pass	
Lead	M18-No33153	CP	%	94			75-125	Pass	
Mercury	M18-No33153	CP	%	85			70-130	Pass	
Molybdenum	M18-No33153	CP	%	93			75-125	Pass	
Selenium	M18-No33153	CP	%	87			75-125	Pass	
Silver	M18-No33153	CP	%	112			75-125	Pass	
Tin	M18-No33153	CP	%	90			75-125	Pass	
Zinc	M18-No33153	CP	%	68			75-125	Fail	Q08
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1				
TRH C6-C9	M18-No33160	CP	%	125			70-130	Pass	
TRH C10-C14	M18-No33160	CP	%	79			70-130	Pass	
Spike - % Recovery									
Volatile Organics					Result 1				
Benzene	M18-No33160	CP	%	95			70-130	Pass	
Ethylbenzene	M18-No33160	CP	%	101			70-130	Pass	
m&p-Xylenes	M18-No33160	CP	%	99			70-130	Pass	
o-Xylene	M18-No33160	CP	%	99			70-130	Pass	
Toluene	M18-No33160	CP	%	92			70-130	Pass	
Xylenes - Total	M18-No33160	CP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1				
Naphthalene	M18-No33160	CP	%	88			70-130	Pass	
TRH C6-C10	M18-No33160	CP	%	121			70-130	Pass	
TRH >C10-C16	M18-No33160	CP	%	109			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons					Result 1				
Acenaphthene	M18-No33161	CP	%	100			70-130	Pass	
Acenaphthylene	M18-No33161	CP	%	101			70-130	Pass	
Anthracene	M18-No33161	CP	%	101			70-130	Pass	
Benz(a)anthracene	M18-No33161	CP	%	105			70-130	Pass	
Benzo(a)pyrene	M18-No33161	CP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	M18-No33161	CP	%	106			70-130	Pass	
Benzo(g,h,i)perylene	M18-No33161	CP	%	76			70-130	Pass	
Benzo(k)fluoranthene	M18-No33161	CP	%	119			70-130	Pass	
Chrysene	M18-No33161	CP	%	109			70-130	Pass	
Dibenz(a,h)anthracene	M18-No33161	CP	%	83			70-130	Pass	
Fluoranthene	M18-No33161	CP	%	102			70-130	Pass	
Fluorene	M18-No33161	CP	%	102			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-No33161	CP	%	84			70-130	Pass	
Naphthalene	M18-No33161	CP	%	93			70-130	Pass	
Phenanthrene	M18-No33161	CP	%	92			70-130	Pass	
Pyrene	M18-No33161	CP	%	100			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M18-No33161	CP	%	104			30-130	Pass	
2.4-Dichlorophenol	M18-No33161	CP	%	101			30-130	Pass	
2.4.5-Trichlorophenol	M18-No33161	CP	%	105			30-130	Pass	
2.4.6-Trichlorophenol	M18-No33161	CP	%	99			30-130	Pass	
2.6-Dichlorophenol	M18-No33161	CP	%	99			30-130	Pass	
4-Chloro-3-methylphenol	M18-No33161	CP	%	105			30-130	Pass	
Pentachlorophenol	M18-No33161	CP	%	116			30-130	Pass	
Tetrachlorophenols - Total	M18-No33161	CP	%	101			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methyl-4.6-dinitrophenol	M18-No33161	CP	%	125			30-130	Pass	
2-Methylphenol (o-Cresol)	M18-No33161	CP	%	99			30-130	Pass	
2-Nitrophenol	M18-No33161	CP	%	103			30-130	Pass	
2.4-Dimethylphenol	M18-No33161	CP	%	105			30-130	Pass	
2.4-Dinitrophenol	M18-No33161	CP	%	51			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M18-No33161	CP	%	109			30-130	Pass	
4-Nitrophenol	M18-No33161	CP	%	89			30-130	Pass	
Dinoseb	M18-No33161	CP	%	50			30-130	Pass	
Phenol	M18-No33161	CP	%	100			30-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-No33163	CP	%	106			75-125	Pass	
Cadmium	M18-No33163	CP	%	118			75-125	Pass	
Chromium	M18-No33163	CP	%	107			75-125	Pass	
Copper	M18-No33163	CP	%	109			75-125	Pass	
Lead	M18-No33163	CP	%	123			75-125	Pass	
Mercury	M18-No33163	CP	%	95			70-130	Pass	
Molybdenum	M18-No33163	CP	%	115			75-125	Pass	
Nickel	M18-No33163	CP	%	102			75-125	Pass	
Selenium	M18-No33163	CP	%	104			75-125	Pass	
Tin	M18-No33163	CP	%	115			75-125	Pass	
Zinc	M18-No33163	CP	%	110			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract at 25°C as rec.)	M18-No33151	CP	pH Units	9.1	9.2	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-No33153	CP	%	3.6	3.9	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-No33153	CP	mg/kg	5.9	6.7	13	30%	Pass	
Cadmium	M18-No33153	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-No33153	CP	mg/kg	8.4	10	18	30%	Pass	
Copper	M18-No33153	CP	mg/kg	5.9	7.0	16	30%	Pass	
Lead	M18-No33153	CP	mg/kg	44	49	10	30%	Pass	
Mercury	M18-No33153	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M18-No33153	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M18-No33153	CP	mg/kg	15	18	19	30%	Pass	
Selenium	M18-No33153	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M18-No33153	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tin	M18-No33153	CP	mg/kg	< 10	11	14	30%	Pass	
Zinc	M18-No33153	CP	mg/kg	79	86	9.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-No33158	CP	mg/kg	< 1	< 1	<1	30%	Pass
Fluoride	M18-No33158	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M18-No33159	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	M18-No33159	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	M18-No33159	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	M18-No33159	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Benzene	M18-No33159	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	M18-No33159	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	M18-No33159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	M18-No33159	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	M18-No33159	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	M18-No33159	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-No33159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M18-No33159	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	M18-No33159	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	M18-No33159	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	M18-No33159	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-No33162	CP	mg/kg	10	10	2.0	30%	Pass
Cadmium	M18-No33162	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-No33162	CP	mg/kg	13	15	13	30%	Pass
Copper	M18-No33162	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	M18-No33162	CP	mg/kg	8.3	8.9	7.0	30%	Pass
Mercury	M18-No33162	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-No33162	CP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-No33162	CP	mg/kg	12	11	2.0	30%	Pass
Selenium	M18-No33162	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-No33162	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-No33162	CP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-No33162	CP	mg/kg	20	17	17	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M18-No33163	CP	%	1.8	1.8	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-No33163	CP	mg/kg	< 2	< 2	<1	30%	Pass
Cadmium	M18-No33163	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-No33163	CP	mg/kg	< 5	6.1	39	30%	Fail
Copper	M18-No33163	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	M18-No33163	CP	mg/kg	12	15	24	30%	Pass
Mercury	M18-No33163	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-No33163	CP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-No33163	CP	mg/kg	< 5	< 5	<1	30%	Pass
Selenium	M18-No33163	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-No33163	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-No33163	CP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-No33163	CP	mg/kg	37	44	17	30%	Pass

Q15

Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis). Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N02	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N04	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
N07	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q08	
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Chris Bennett	Senior Analyst-Metal (VIC)



Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



CITY OF PORT PHILLIP

Chain of Custody

File No:	CSCP
Page:	1 of 2

Address:	CHLISLE ST, CAR PARKS	Sampled by:	DP
Project:	CONTAMINATION ASSESSMENT	Date sampled:	6/5/15

Sample Number	Sample Type	Material Description	Testing Required			
			1W26621 SOIL SCREEN	METALS - P16/1	HEX CR. - EG048	PAH-16 EP075B
1	BH1-0.2	SAND	X			
2	BH1-0.4	"		X	X	X
3	BH2-0.2	"		X	X	X
4	BH2-0.3	"		X	X	X
5	BH2-0.4	"		X	X	X
6	BH2-0.6	CLAY	X			
7	BH3-0.3	SAND + ROCK	X			
8	BH3-0.4	SILT		X	X	X
9	BH3-0.5	CLAY	X			
10	BH4-0.3	SAND + ROCK		X	X	X
11	BH4-0.4	CLAY		X	X	X
12	BH5-0.3	SAND		X	X	X
13	BH5-0.4	SILT	X			
14	BH5-0.6	"		X	X	X
15	BH5-0.7	CLAY		X	X	X
16	BH6-0.2	SAND + ROCK	X			
17	BH6-0.3	SILT		X	X	X
18	BH7-0.15	SAND + ROCK	X			
19	BH7-0.2	SAND		X	X	X
20	BH7-0.4	SILT	X			

Turnaround:	STANDARD	3 DAY	48 HOURS	24 HOURS
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NOTES

Report to: DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0466 752 892

AUS QUOTE: WE/257/15

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	<i>MAN</i>	AUS	6/5	16.00

Environmental Division
Melbourne
Work Order *1500*
EM1504725

Telephone : +61-3-9549 9600



Chain of Custody

File No:	CSCP
Page:	2 OF 2

Address:	CHARLES ST CAR PARKS	Sampled by:	DP
Project:	CONTAM. ASSESS ^T	Date sampled:	6/5/15

Sample Number	Sample Type	Material Description	Testing Required			
			1WK4621 SOIL SCREEN	METALS -P16/1	HEX CR -EG0#8	PAH-16 EP075B
21	BH7-0.65	CLAY		X	X	X
22	BH8-0.3	SAND		X	X	X
23	BH8-0.5	SILT		X	X	X
24	BH9-0.15	SAND		X	X	X
25	BH9-0.25	"		X	X	X
26	BH9-0.5	CLAY		X	X	X
27	BH10-0.15	SAND+lock	X			
28	BH10-0.3	CLAY		X	X	X
29	BH10-0.5	"	X			

Turnaround:	STANDARD	3 DAY	48 HOURS	24 HOURS
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NOTES

Report to: DARREN PENDERGAST email: dpenderg@portphilip.vic.gov.au, m: 0466 752 892

ALS QUOTE, ME / 257 / 15.

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	COPP	DARRIN	ALS	6/5	16:05

SAMPLE RECEIPT NOTIFICATION (SRN)**Comprehensive Report**

Work Order	: EM1504725		
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	Page	: 1 of 3
Order number	: ----	Quote number	: EM2014CITPOR0026 (MEBQ/125/14)
C-O-C number	: CSCP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS		
Sampler	: DP		

Dates

Date Samples Received	: 06-MAY-2015	Issue Date	: 07-MAY-2015 13:38
Client Requested Due Date	: 13-MAY-2015	Scheduled Reporting Date	: 13-MAY-2015

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 18.9
No. of coolers/boxes	: 2	No. of samples received	: 29
Security Seal	: Intact.	No. of samples analysed	: 29

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- **Analytical work for this work order will be conducted at ALS Springvale.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG048G Total Hexavalent Chromium (Alkaline digestion) by	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - P-16 IWRG 621	SOIL - P-16/1 IWRG 621 METALS
EM1504725-001	06-MAY-2015 15:00	BH1_0.2			✓	
EM1504725-002	06-MAY-2015 15:00	BH1_0.4	✓	✓		✓
EM1504725-003	06-MAY-2015 15:00	BH2_0.2	✓	✓		✓
EM1504725-004	06-MAY-2015 15:00	BH2_0.3	✓	✓		✓
EM1504725-005	06-MAY-2015 15:00	BH2_0.4	✓	✓		✓
EM1504725-006	06-MAY-2015 15:00	BH2_0.6			✓	
EM1504725-007	06-MAY-2015 15:00	BH3_0.3			✓	
EM1504725-008	06-MAY-2015 15:00	BH3_0.4	✓	✓		✓
EM1504725-009	06-MAY-2015 15:00	BH3_0.5			✓	
EM1504725-010	06-MAY-2015 15:00	BH4_0.3	✓	✓		✓
EM1504725-011	06-MAY-2015 15:00	BH4_0.4	✓	✓		✓
EM1504725-012	06-MAY-2015 15:00	BH5_0.3	✓	✓		✓
EM1504725-013	06-MAY-2015 15:00	BH5_0.4			✓	
EM1504725-014	06-MAY-2015 15:00	BH5_0.6	✓	✓		✓
EM1504725-015	06-MAY-2015 15:00	BH5_0.7	✓	✓		✓
EM1504725-016	06-MAY-2015 15:00	BH6_0.2			✓	
EM1504725-017	06-MAY-2015 15:00	BH6_0.3	✓	✓		✓
EM1504725-018	06-MAY-2015 15:00	BH7_0.15			✓	
EM1504725-019	06-MAY-2015 15:00	BH7_0.2	✓	✓		✓
EM1504725-020	06-MAY-2015 15:00	BH7_0.4	✓	✓		✓
EM1504725-021	06-MAY-2015 15:00	BH7_0.65	✓	✓		✓
EM1504725-022	06-MAY-2015 15:00	BH8_0.3	✓	✓		✓
EM1504725-023	06-MAY-2015 15:00	BH8_0.5	✓	✓		✓
EM1504725-024	06-MAY-2015 15:00	BH9_0.15	✓	✓		✓
EM1504725-025	06-MAY-2015 15:00	BH9_0.25	✓	✓		✓
EM1504725-026	06-MAY-2015 15:00	BH9_0.5	✓	✓		✓
EM1504725-027	06-MAY-2015 15:00	BH10_0.15			✓	
EM1504725-028	06-MAY-2015 15:00	BH10_0.3	✓	✓		✓
EM1504725-029	06-MAY-2015 15:00	BH10_0.5			✓	

Proactive Holding Time Report

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

CERTIFICATE OF ANALYSIS

Work Order	: EM1504725	Page	: 1 of 42
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Site	: CARLISLE ST, CARPARKS	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



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

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**
- **EP066-EM/075-EM: Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
		Melbourne Organics
Xing Lin	Senior Organic Chemist	Melbourne Organics



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.0	7.8	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	20.3	15.6	17.6	14.0	15.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	11	8	12	16
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	7	8	8	<5	9
Lead	7439-92-1	5	mg/kg	32	18	8	10	27
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	21	18	12	9	19
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	10	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	11	35	8	8	39
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	180	110	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	1.2	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.04	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.04	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.04	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.04	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.04	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.07	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.04	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.04	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.04	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.04	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.04	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.04	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.04	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.04	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.04	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.04	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.04	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.04	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.04	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.04	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.04	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	96.6	90.3	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH2_0.6	BH3_0.5	BH4_0.4	BH5_0.7	BH7_0.65
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-006	EM1504725-009	EM1504725-011	EM1504725-015	EM1504725-021
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.1	93.8	----	----	----
Toluene-D8	2037-26-5	0.1	%	92.8	94.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	94.2	96.8	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	96.1	95.7	85.4
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	97.5	98.1	94.3
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	76.3	77.5	64.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	106	104	108
Anthracene-d10	1719-06-8	0.1	%	----	----	123	117	108
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	105	102	114
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	72.2	57.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.8	59.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	102	74.9	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	67.4	56.2	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	57.6	52.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	83.5	74.5	----	----	----
Anthracene-d10	1719-06-8	0.1	%	104	103	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	115	108	----	----	----



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	---	0.1	pH Unit	---	---	7.6	---	---
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	---	1.0	%	16.7	17.9	22.0	---	---
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	33	49	8	---	---
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	---	---
Copper	7440-50-8	5	mg/kg	7	5	8	---	---
Lead	7439-92-1	5	mg/kg	13	14	9	---	---
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	---	---
Nickel	7440-02-0	2	mg/kg	14	11	16	---	---
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	---	---
Silver	7440-22-4	2	mg/kg	<2	<2	<2	---	---
Tin	7440-31-5	5	mg/kg	<5	<5	<5	---	---
Zinc	7440-66-6	5	mg/kg	6	<5	9	---	---
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	---	---
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	---	---	<1	---	---
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	---	---	140	---	---
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	---	0.1	mg/kg	---	---	<0.1	---	---
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	---	---	<0.2	---	---
Toluene	108-88-3	0.5	mg/kg	---	---	<0.5	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	---	---	<0.5	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	---	---	<0.5	---	---
Styrene	100-42-5	0.5	mg/kg	---	---	<0.5	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	---	---	<0.5	---	---
^ Sum of monocyclic aromatic hydrocarbons	---	0.2	mg/kg	---	---	<0.2	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	---	---	<0.5	---	---
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	---	---	<1	---	---
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	---	---	<0.02	---	---
1.1-Dichloroethene	75-35-4	0.01	mg/kg	---	---	<0.01	---	---
Methylene chloride	75-09-2	0.4	mg/kg	---	---	<0.4	---	---
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	---	---	<0.02	---	---
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	---	---	<0.01	---	---
Chloroform	67-66-3	0.02	mg/kg	---	---	<0.02	---	---
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	---	---	<0.01	---	---
Carbon Tetrachloride	56-23-5	0.01	mg/kg	---	---	<0.01	---	---
1.2-Dichloroethane	107-06-2	0.02	mg/kg	---	---	<0.02	---	---
Trichloroethene	79-01-6	0.02	mg/kg	---	---	<0.02	---	---
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	---	---	<0.04	---	---
Tetrachloroethene	127-18-4	0.02	mg/kg	---	---	<0.02	---	---
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	---	---	<0.01	---	---
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	---	---	<0.02	---	---
Hexachlorobutadiene	87-68-3	0.02	mg/kg	---	---	<0.02	---	---
Chlorobenzene	108-90-7	0.02	mg/kg	---	---	<0.02	---	---
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	---	---	<0.02	---	---
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	---	---	<0.02	---	---
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	---	---	<0.01	---	---
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	---	---	<0.01	---	---
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	---	---	<0.01	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	---	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	---	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	---	---	---
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	---	---	---
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	---	---	---
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	---	---	---
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	---	---	<0.04	---	---
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	---	---	<0.04	---	---
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	---	---	<0.04	---	---
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	---	---	<0.04	---	---
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	---	---	<0.05	---	---
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	---	---	<0.05	---	---
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	---	---	<0.04	---	---
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	---	---	<0.07	---	---
Pentachlorophenol	87-86-5	0.2	mg/kg	---	---	<0.2	---	---
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	---	---	<0.04	---	---
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	---	---	<1	---	---
2-Methylphenol	95-48-7	1	mg/kg	---	---	<1	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	---	---	<1	---	---
2-Nitrophenol	88-75-5	1	mg/kg	---	---	<1	---	---
2,4-Dimethylphenol	105-67-9	1	mg/kg	---	---	<1	---	---
2,4-Dinitrophenol	51-28-5	5	mg/kg	---	---	<5	---	---
4-Nitrophenol	100-02-7	5	mg/kg	---	---	<5	---	---
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	---	---	<5	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	---	---	<5	---	---
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	---	---	<5	---	---
^ Sum of Phenols (non-halogenated)	---	1	mg/kg	---	---	<1	---	---
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	---	---	<0.5	---	---
Acenaphthene	83-32-9	0.5	mg/kg	---	---	<0.5	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	---	---	<0.5	---	---
Fluorene	86-73-7	0.5	mg/kg	---	---	<0.5	---	---
Phenanthrene	85-01-8	0.5	mg/kg	---	---	<0.5	---	---
Anthracene	120-12-7	0.5	mg/kg	---	---	<0.5	---	---
Fluoranthene	206-44-0	0.5	mg/kg	---	---	<0.5	---	---
Pyrene	129-00-0	0.5	mg/kg	---	---	<0.5	---	---
Benzo(a)anthracene	56-55-3	0.5	mg/kg	---	---	<0.5	---	---
Chrysene	218-01-9	0.5	mg/kg	---	---	<0.5	---	---
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	---	---	<0.5	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	---	---	<0.5	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	---	---	<0.5	---	---
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	---	---	<0.5	---	---
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	---	---	<0.5	---	---
^ Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	---	---	<0.5	---	---
^ Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	---	---	<0.5	---	---
^ Benzo(a)pyrene TEQ (half LOR)	---	0.5	mg/kg	---	---	0.6	---	---
^ Benzo(a)pyrene TEQ (LOR)	---	0.5	mg/kg	---	---	1.2	---	---
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	---	---	<0.04	---	---
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	---	---	<0.04	---	---
beta-BHC	319-85-7	0.03	mg/kg	---	---	<0.04	---	---
gamma-BHC	58-89-9	0.03	mg/kg	---	---	<0.04	---	---
delta-BHC	319-86-8	0.03	mg/kg	---	---	<0.04	---	---
Heptachlor	76-44-8	0.03	mg/kg	---	---	<0.04	---	---
Aldrin	309-00-2	0.03	mg/kg	---	---	<0.04	---	---
Heptachlor epoxide	1024-57-3	0.03	mg/kg	---	---	<0.04	---	---
cis-Chlordane	5103-71-9	0.03	mg/kg	---	---	<0.04	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	---	---	<0.04	---	---
Endosulfan 1	959-98-8	0.03	mg/kg	---	---	<0.04	---	---
4.4'-DDE	72-55-9	0.05	mg/kg	---	---	<0.05	---	---
Dieldrin	60-57-1	0.03	mg/kg	---	---	<0.04	---	---
Endrin aldehyde	7421-93-4	0.03	mg/kg	---	---	<0.04	---	---
Endrin	72-20-8	0.03	mg/kg	---	---	<0.04	---	---
Endosulfan 2	33213-65-9	0.03	mg/kg	---	---	<0.04	---	---
4.4'-DDD	72-54-8	0.05	mg/kg	---	---	<0.05	---	---
Endosulfan sulfate	1031-07-8	0.03	mg/kg	---	---	<0.04	---	---
4.4'-DDT	50-29-3	0.05	mg/kg	---	---	<0.05	---	---
Methoxychlor	72-43-5	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of organochlorine pesticides	---	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of DDD + DDE + DDT	---	0.05	mg/kg	---	---	<0.05	---	---
^ Chlordane	57-74-9	0.03	mg/kg	---	---	<0.04	---	---
^ Sum of other organochlorine pesticides	---	0.03	mg/kg	---	---	<0.04	---	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	10	mg/kg	---	---	<10	---	---
C10 - C14 Fraction	---	50	mg/kg	---	---	<50	---	---
C6 - C10 Fraction	C6_C10	10	mg/kg	---	---	<10	---	---
C15 - C28 Fraction	---	100	mg/kg	---	---	<100	---	---
C29 - C36 Fraction	---	100	mg/kg	---	---	<100	---	---
^ C10 - C36 Fraction (sum)	---	50	mg/kg	---	---	<50	---	---
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	---	---	<50	---	---
>C16 - C34 Fraction	---	100	mg/kg	---	---	<100	---	---
>C34 - C40 Fraction	---	100	mg/kg	---	---	<100	---	---
^ >C10 - C40 Fraction (sum)	---	50	mg/kg	---	---	<50	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	50	mg/kg	---	---	<50	---	---
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	---	---	<10	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	---	---	88.5	---	---



Analytical Results

Sub-Matrix: CLAY (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH9_0.5	BH10_0.3	BH10_0.5	---	---
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	---	---
Compound	CAS Number	LOR	Unit	EM1504725-026	EM1504725-028	EM1504725-029	---	---
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	---	---	96.8	---	---
Toluene-D8	2037-26-5	0.1	%	---	---	95.9	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	---	---	88.9	---	---
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	86.3	88.6	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	95.4	98.6	---	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	45.0	44.0	---	---	---
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	110	112	---	---	---
Anthracene-d10	1719-06-8	0.1	%	120	116	---	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	115	118	---	---	---
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	---	---	72.6	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	72.5	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	---	---	64.3	---	---
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	---	---	70.3	---	---
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	---	---	67.0	---	---
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	89.7	---	---
Anthracene-d10	1719-06-8	0.1	%	---	---	108	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	109	---	---



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.0	10.4	6.8	4.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	11	<5	34	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	47	<5	16	51	5
Lead	7439-92-1	5	mg/kg	720	355	154	3840	40
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	15	6	11	29	6
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	15	<5	14	2700	34
Zinc	7440-66-6	5	mg/kg	592	133	203	86	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.4	<0.1	0.7	1.7	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	50	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	1.4	0.8	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	4.5	2.8	<0.5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	4.4	2.7	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	2.3	1.4	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	2.0	1.2	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	3.3	1.6	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	1.1	0.7	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	2.6	1.3	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	1.6	0.8	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	1.8	0.9	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	25.0	14.2	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	3.5	1.8	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	3.7	2.0	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	4.0	2.3	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.18	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.18	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.18	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.18	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.18	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.18	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.18	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.37	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.18	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<15	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<15	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<15	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<15	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<14	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	2.7	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	0.9	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	7.6	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	7.4	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	4.0	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	3.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	8.1	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	4.4	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	2.2	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	2.4	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	43.2	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	5.9	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	6.1	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	6.4	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.18	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.18	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.18	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.18	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.18	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.18	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.18	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.18	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.18	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.18	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.18	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.18	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.18	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.18	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.18	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.18	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.18	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.18	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.18	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	110	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	110	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	85.3	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH1_0.2	BH1_0.4	BH2_0.2	BH2_0.3	BH2_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-001	EM1504725-002	EM1504725-003	EM1504725-004	EM1504725-005
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	84.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	78.6	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	93.2	95.1	94.9	97.4
2-Chlorophenol-D4	93951-73-6	0.1	%	----	95.4	98.0	98.4	98.5
2,4,6-Tribromophenol	118-79-6	0.1	%	----	79.2	82.0	74.6	81.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	106	110	106	110
Anthracene-d10	1719-06-8	0.1	%	----	120	109	112	116
4-Terphenyl-d14	1718-51-0	0.1	%	----	105	97.3	101	103
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	Not Determined	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	Not Determined	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	Not Determined	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	Not Determined	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	Not Determined	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	Not Determined	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	Not Determined	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	Not Determined	----	----	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	8.1	----	----	8.1	8.2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	8.9	10.1	6.3	13.7	5.0
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	45	31	28	34	28
Lead	7439-92-1	5	mg/kg	37	<5	165	<5	<5
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	101	107	47	96	87
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	6	<5	7	<5	<5
Zinc	7440-66-6	5	mg/kg	63	46	161	41	39
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	<1	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	140	----	----	150	120
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	----	----	<0.7	<0.7
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	<0.2	<0.2



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	----	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	<0.4	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	<0.01	<0.01
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	1.8	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	0.8	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	9.0	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	2.2	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	12.2	----	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	11.0	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	5.4	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	4.4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	6.7	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	2.2	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	5.4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	3.0	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	0.8	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	3.4	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	68.3	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	8.0	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	8.0	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	8.0	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.36	----	----	<0.34	<0.36
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<14	----	----	<14	<14
4-Nitrophenol	100-02-7	5	mg/kg	<14	----	----	<14	<14
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<14	----	----	<14	<14



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	<14	----	----	<14	<14
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<14	----	----	<14	<14
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
beta-BHC	319-85-7	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
gamma-BHC	58-89-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
delta-BHC	319-86-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Heptachlor	76-44-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Aldrin	309-00-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan 1	959-98-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDE	72-55-9	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Dieldrin	60-57-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endrin	72-20-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDD	72-54-8	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
4,4'-DDT	50-29-3	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
Methoxychlor	72-43-5	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.18	----	----	<0.17	<0.18
^ Chlordane	57-74-9	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.18	----	----	<0.17	<0.18
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	91.8	----	----	87.0	97.5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.3	BH4_0.3	BH5_0.3	BH6_0.2	BH7_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-007	EM1504725-010	EM1504725-012	EM1504725-016	EM1504725-018
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.3	----	----	92.9	97.8
Toluene-D8	2037-26-5	0.1	%	92.3	----	----	91.3	97.2
4-Bromofluorobenzene	460-00-4	0.1	%	94.5	----	----	84.4	94.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	89.2	94.4	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	90.8	96.0	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	72.4	79.5	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	102	103	----	----
Anthracene-d10	1719-06-8	0.1	%	----	115	101	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	97.3	92.4	----	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2-Chlorophenol-D4	93951-73-6	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2,4,6-Tribromophenol	118-79-6	0.1	%	Not Determined	----	----	Not Determined	Not Determined
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	Not Determined	----	----	Not Determined	Not Determined
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	Not Determined	----	----	Not Determined	Not Determined
2-Fluorobiphenyl	321-60-8	0.1	%	Not Determined	----	----	Not Determined	Not Determined
Anthracene-d10	1719-06-8	0.1	%	Not Determined	----	----	Not Determined	Not Determined
4-Terphenyl-d14	1718-51-0	0.1	%	Not Determined	----	----	Not Determined	Not Determined



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	----	----	8.9
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	2.7	10.2	10.5	1.8	16.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	32	<5	32	<5	15
Lead	7439-92-1	5	mg/kg	256	8	581	<5	20
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	55	3	12	<2	29
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	10	<5	12	<5	<5
Zinc	7440-66-6	5	mg/kg	281	10	349	<5	57
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.9	<0.1	0.7	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	----	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	----	----	<40
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	----	----	<0.2



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	----	----	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	----	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	----	----	----	----	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	----	----	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	----	----	<0.01
Chloroform	67-66-3	0.02	mg/kg	----	----	----	----	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	----	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	----	----	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	----	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	----	----	----	----	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	----	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	----	----	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	----	----	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	----	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	----	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	----	----	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	----	----	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	----	----	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	----	<0.01
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	3.4	<0.5	----



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	3.4	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	2.6	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	1.1	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	1.8	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	18.7	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	2.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	2.7	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	3.0	1.2	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	----	----	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	----	----	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	----	----	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	----	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	----	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	----	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	----	----	<0.07
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg	----	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	----	----	----	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	----	----	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	----	----	----	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	----	----	----	<5



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	----	----	----	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	----	----	<0.03



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	----	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	105



Analytical Results

Sub-Matrix: SAND (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH7_0.2	BH8_0.3	BH9_0.15	BH9_0.25	BH10_0.15
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-019	EM1504725-022	EM1504725-024	EM1504725-025	EM1504725-027
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	----	103
Toluene-D8	2037-26-5	0.1	%	----	----	----	----	98.8
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	----	97.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	97.9	78.6	84.1	89.0	----
2-Chlorophenol-D4	93951-73-6	0.1	%	99.7	84.9	93.2	93.5	----
2,4,6-Tribromophenol	118-79-6	0.1	%	79.6	59.2	64.2	60.8	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	105	94.8	105	108	----
Anthracene-d10	1719-06-8	0.1	%	113	86.7	97.3	98.8	----
4-Terphenyl-d14	1718-51-0	0.1	%	101	105	106	108	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	----	----	82.0
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	----	82.8
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	----	74.5
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	----	----	82.0
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	----	----	76.3
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	----	102
Anthracene-d10	1719-06-8	0.1	%	----	----	----	----	108
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	----	113



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	7.2	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	11.6	3.5	3.4	11.0	1.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	15	<5	<5	15	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	7	6	13	6	6
Lead	7439-92-1	5	mg/kg	40	37	18	7	45
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	7	4	2	15	4
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	21	14	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	36	42	16	12	93
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	3	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	50	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	----	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	1.2	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	<0.04	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	<0.04	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	<0.04	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.04	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.04	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.07	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.04	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
Dinoseb	88-85-7	5	mg/kg	----	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.04	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.04	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.04	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.04	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.04	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.04	----	----	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.04	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.04	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.04	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP075I: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.04	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	<0.04	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.04	----	----	----
Endrin	72-20-8	0.03	mg/kg	----	<0.04	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.04	----	----	----
4.4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.04	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.04	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	85.5	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH3_0.4	BH5_0.4	BH5_0.6	BH6_0.3	BH7_0.4
				06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
Compound	CAS Number	LOR	Unit	EM1504725-008	EM1504725-013	EM1504725-014	EM1504725-017	EM1504725-020
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	97.0	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	94.3	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	96.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.0	----	93.6	95.2	99.6
2-Chlorophenol-D4	93951-73-6	0.1	%	94.3	----	96.5	97.4	102
2,4,6-Tribromophenol	118-79-6	0.1	%	78.8	----	76.0	75.7	80.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	107	----	102	98.4	110
Anthracene-d10	1719-06-8	0.1	%	115	----	110	115	118
4-Terphenyl-d14	1718-51-0	0.1	%	104	----	98.0	99.7	104
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	46.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	54.5	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	69.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	50.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	49.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	74.2	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	96.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	103	----	----	----



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

BH8_0.5

Client sampling date / time

06-MAY-2015 15:00

Compound	CAS Number	LOR	Unit	EM1504725-023	---	---	---	---
----------	------------	-----	------	---------------	-----	-----	-----	-----

EA055: Moisture Content

Moisture Content (dried @ 103°C)	---	1.0	%	21.6	---	---	---	---
----------------------------------	-----	-----	---	------	-----	-----	-----	-----

EG005T: Total Metals by ICP-AES

Arsenic	7440-38-2	5	mg/kg	13	---	---	---	---
Cadmium	7440-43-9	1	mg/kg	<1	---	---	---	---
Copper	7440-50-8	5	mg/kg	9	---	---	---	---
Lead	7439-92-1	5	mg/kg	14	---	---	---	---
Molybdenum	7439-98-7	2	mg/kg	<2	---	---	---	---
Nickel	7440-02-0	2	mg/kg	14	---	---	---	---
Selenium	7782-49-2	5	mg/kg	<5	---	---	---	---
Silver	7440-22-4	2	mg/kg	<2	---	---	---	---
Tin	7440-31-5	5	mg/kg	<5	---	---	---	---
Zinc	7440-66-6	5	mg/kg	47	---	---	---	---

EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.1	mg/kg	<0.1	---	---	---	---
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EG048: Hexavalent Chromium (Alkaline Digest)

Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	---	---	---	---
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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	---	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	---	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	---	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	---	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	---	---	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	---	---	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	---	---	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	---	---	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	---	---	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	---	---	---	---
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	---	---	---	---
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	---	---	---	---



Analytical Results

Sub-Matrix: SILT (Matrix: SOIL)

Client sample ID

BH8_0.5

Client sampling date / time

06-MAY-2015 15:00

Compound	CAS Number	LOR	Unit	EM1504725-023	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	79.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	87.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	52.8	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	100	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	103	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	107	----	----	----	----



Surrogate Control Limits

Sub-Matrix: CLAY		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2,4,6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: SAND		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125



Sub-Matrix: SAND		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)T: PAH Surrogates - Continued			
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2.4.6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: SILT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28.3	134
2-Chlorophenol-D4	93951-73-6	27.2	123
2.4.6-Tribromophenol	118-79-6	24.6	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29.4	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: EM1504725	Page	: 1 of 20
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST		
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	Date Received	: 06-MAY-2015
Order number	: ----	Date Analysed	: 07-MAY-2015
C-O-C number	: CSCP	Date Issued	: 13-MAY-2015
No. of samples received	: 29		
No. of samples analysed	: 29	Quote number	: MEBQ/125/14

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.



Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Unit	Lower Limit	Upper Limit	Result
BH1_0.2	EM1504725-001	Lead	EN69/EG005T	5	mg/kg	----	300	720
BH1_0.2	EM1504725-001	Zinc	EN69/EG005T	5	mg/kg	----	200	592
BH1_0.2	EM1504725-001	Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	1	4.4
BH1_0.2	EM1504725-001	Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	43.2
BH3_0.3	EM1504725-007	Nickel	EN69/EG005T	2	mg/kg	----	60	101
BH6_0.2	EM1504725-016	Nickel	EN69/EG005T	2	mg/kg	----	60	96
BH7_0.15	EM1504725-018	Nickel	EN69/EG005T	2	mg/kg	----	60	87



Analytical Results

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Lower Limit	Upper Limit	06-MAY-2015	06-MAY-2015	06-MAY-2015	----	----
						15:00	15:00	15:00	----	----
						EM1504725-029	EM1504725-006	EM1504725-009	----	----
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	7.6	8.0	7.8	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	20	8	9	11	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	3	<1	<1	<1	----	----
Copper	EN69/EG005T	5	mg/kg	----	100	8	7	8	----	----
Lead	EN69/EG005T	5	mg/kg	----	300	9	32	18	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	40	<2	<2	<2	----	----
Nickel	EN69/EG005T	2	mg/kg	----	60	16	21	18	----	----
Selenium	EN69/EG005T	5	mg/kg	----	10	<5	<5	<5	----	----
Silver	EN69/EG005T	2	mg/kg	----	10	<2	<2	<2	----	----
Tin	EN69/EG005T	5	mg/kg	----	50	<5	10	<5	----	----
Zinc	EN69/EG005T	5	mg/kg	----	200	9	11	35	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	50	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	450	140	180	110	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	ORG17A-EM/EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.04	<0.03	<0.04	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	----	----
				Lower Limit	Upper Limit	EM1504725-029	EM1504725-006	EM1504725-009	----	----
EP075A: Phenolic Compounds (Non-halogenated) - Continued										
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.04	<0.03	<0.04	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	100	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	1000	<50	<50	<50	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00		
				Lower Limit	Upper Limit	EM1504725-029	EM1504725-006	EM1504725-009		
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	7.6	8.0	7.8	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	500	8	9	11	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	100	<1	<1	<1	----	----
Copper	EN69/EG005T	5	mg/kg	----	5000	8	7	8	----	----
Lead	EN69/EG005T	5	mg/kg	----	1500	9	32	18	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	1000	<2	<2	<2	----	----
Nickel	EN69/EG005T	2	mg/kg	----	3000	16	21	18	----	----
Selenium	EN69/EG005T	5	mg/kg	----	50	<5	<5	<5	----	----
Silver	EN69/EG005T	2	mg/kg	----	180	<2	<2	<2	----	----
Tin	EN69/EG005T	5	mg/kg	----	500	<5	10	<5	----	----
Zinc	EN69/EG005T	5	mg/kg	----	35000	9	11	35	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	2500	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	10000	140	180	110	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.04	<0.03	<0.04	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	----	----
				Lower Limit	Upper Limit	EM1504725-029	EM1504725-006	EM1504725-009	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	5	<0.5	<0.5	<0.5	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	1.2	<0.04	<0.03	<0.04	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.04	<0.03	<0.04	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.04	<0.03	<0.04	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.04	<0.03	<0.04	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	650	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	10000	<50	<50	<50	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	----	----
				Lower Limit	Upper Limit	EM1504725-029	EM1504725-006	EM1504725-009	----	----
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	2	12.5	7.6	8.0	7.8	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	2000	8	9	11	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	400	<1	<1	<1	----	----
Copper	EN69/EG005T	5	mg/kg	----	20000	8	7	8	----	----
Lead	EN69/EG005T	5	mg/kg	----	6000	9	32	18	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	4000	<2	<2	<2	----	----
Nickel	EN69/EG005T	2	mg/kg	----	12000	16	21	18	----	----
Selenium	EN69/EG005T	5	mg/kg	----	200	<5	<5	<5	----	----
Silver	EN69/EG005T	2	mg/kg	----	720	<2	<2	<2	----	----
Zinc	EN69/EG005T	5	mg/kg	----	140000	9	11	35	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	10000	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	40000	140	180	110	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.04	<0.03	<0.04	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: CLAY

Compound	Method	LOR	Unit	Client sample ID		BH10_0.5	BH2_0.6	BH3_0.5	----	----
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	----	----
				Lower Limit	Upper Limit	EM1504725-029	EM1504725-006	EM1504725-009	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	4.8	<0.04	<0.03	<0.04	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.04	<0.03	<0.04	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.04	<0.03	<0.04	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.04	<0.03	<0.04	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	2600	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	40000	<50	<50	<50	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	8.9	7.9	8.1	8.1	8.2
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	20	<5	8	<5	<5	<5
Cadmium	EN69/EG005T	1	mg/kg	----	3	<1	<1	<1	<1	<1
Copper	EN69/EG005T	5	mg/kg	----	100	15	47	45	34	28
Lead	EN69/EG005T	5	mg/kg	----	300	20	720	37	<5	<5
Molybdenum	EN69/EG005T	2	mg/kg	----	40	<2	<2	<2	<2	<2
Nickel	EN69/EG005T	2	mg/kg	----	60	29	15	101	96	87
Selenium	EN69/EG005T	5	mg/kg	----	10	<5	<5	<5	<5	<5
Silver	EN69/EG005T	2	mg/kg	----	10	<2	<2	<2	<2	<2
Tin	EN69/EG005T	5	mg/kg	----	50	<5	15	6	<5	<5
Zinc	EN69/EG005T	5	mg/kg	----	200	57	592	63	41	39
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	1	<0.1	0.4	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	450	<40	50	140	150	120
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	ORG17A-EM/EP066-EM	0.1	mg/kg	----	2	<0.1	<0.7	<0.7	<0.7	<0.7
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.18	<0.18	<0.17	<0.18
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										



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Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	1	<0.5	4.4	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	43.2	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.18	<0.18	<0.17	<0.18
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	1000	<50	<50	<50	<50	<50



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	8.9	7.9	8.1	8.1	8.2
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	500	<5	8	<5	<5	<5
Cadmium	EN69/EG005T	1	mg/kg	----	100	<1	<1	<1	<1	<1
Copper	EN69/EG005T	5	mg/kg	----	5000	15	47	45	34	28
Lead	EN69/EG005T	5	mg/kg	----	1500	20	720	37	<5	<5
Molybdenum	EN69/EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	<2
Nickel	EN69/EG005T	2	mg/kg	----	3000	29	15	101	96	87
Selenium	EN69/EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Silver	EN69/EG005T	2	mg/kg	----	180	<2	<2	<2	<2	<2
Tin	EN69/EG005T	5	mg/kg	----	500	<5	15	6	<5	<5
Zinc	EN69/EG005T	5	mg/kg	----	35000	57	592	63	41	39
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	75	<0.1	0.4	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	10000	<40	50	140	150	120
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.18	<0.18	<0.17	<0.18
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	5	<0.5	4.4	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	43.2	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.18	<0.18	<0.17	<0.18
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.18	<0.18	<0.17	<0.18
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	650	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	10000	<50	<50	<50	<50	<50



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	2	12.5	8.9	7.9	8.1	8.1	8.2
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	2000	<5	8	<5	<5	<5
Cadmium	EN69/EG005T	1	mg/kg	----	400	<1	<1	<1	<1	<1
Copper	EN69/EG005T	5	mg/kg	----	20000	15	47	45	34	28
Lead	EN69/EG005T	5	mg/kg	----	6000	20	720	37	<5	<5
Molybdenum	EN69/EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	<2
Nickel	EN69/EG005T	2	mg/kg	----	12000	29	15	101	96	87
Selenium	EN69/EG005T	5	mg/kg	----	200	<5	<5	<5	<5	<5
Silver	EN69/EG005T	2	mg/kg	----	720	<2	<2	<2	<2	<2
Zinc	EN69/EG005T	5	mg/kg	----	140000	57	592	63	41	39
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	300	<0.1	0.4	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	40000	<40	50	140	150	120
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.18	<0.18	<0.17	<0.18
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	20	<0.5	4.4	<0.5	<0.5	<0.5



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SAND

Compound	Method	LOR	Unit	Client sample ID		BH10_0.15	BH1_0.2	BH3_0.3	BH6_0.2	BH7_0.15
				Sampling date/time		06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00	06-MAY-2015 15:00
				Lower Limit	Upper Limit	EM1504725-027	EM1504725-001	EM1504725-007	EM1504725-016	EM1504725-018
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	43.2	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.18	<0.18	<0.17	<0.18
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.18	<0.18	<0.17	<0.18
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.18	<0.18	<0.17	<0.18
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	2600	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	40000	<50	<50	<50	<50	<50

Note: Red shading is applied where the result is equal to or greater than the Guideline Limit.



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Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		BH5_0.4	----	----	----	----
				Sampling date/time	Guideline					
				Lower Limit	Upper Limit	06-MAY-2015 15:00	----	----	----	----
						EM1504725-013	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	7.2	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	20	<5	----	----	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	3	<1	----	----	----	----
Copper	EN69/EG005T	5	mg/kg	----	100	6	----	----	----	----
Lead	EN69/EG005T	5	mg/kg	----	300	37	----	----	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	40	<2	----	----	----	----
Nickel	EN69/EG005T	2	mg/kg	----	60	4	----	----	----	----
Selenium	EN69/EG005T	5	mg/kg	----	10	<5	----	----	----	----
Silver	EN69/EG005T	2	mg/kg	----	10	<2	----	----	----	----
Tin	EN69/EG005T	5	mg/kg	----	50	14	----	----	----	----
Zinc	EN69/EG005T	5	mg/kg	----	200	42	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	1	0.2	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	1	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	50	3	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	450	50	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	ORG17A-EM/EP066-EM	0.1	mg/kg	----	2	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	1	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.04	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										



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Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		Sampling date/time				
				Lower Limit	Upper Limit	BH5_0.4	06-MAY-2015 15:00	EM1504725-013	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	1	<0.5	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.04	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	100	<10	----	----	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	1000	<50	----	----	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		BH5_0.4	----	----	----	----
				Sampling date/time	Guideline					
				Lower Limit	Upper Limit	06-MAY-2015 15:00	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	4	9	7.2	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	500	<5	----	----	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	100	<1	----	----	----	----
Copper	EN69/EG005T	5	mg/kg	----	5000	6	----	----	----	----
Lead	EN69/EG005T	5	mg/kg	----	1500	37	----	----	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	1000	<2	----	----	----	----
Nickel	EN69/EG005T	2	mg/kg	----	3000	4	----	----	----	----
Selenium	EN69/EG005T	5	mg/kg	----	50	<5	----	----	----	----
Silver	EN69/EG005T	2	mg/kg	----	180	<2	----	----	----	----
Tin	EN69/EG005T	5	mg/kg	----	500	14	----	----	----	----
Zinc	EN69/EG005T	5	mg/kg	----	35000	42	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	75	0.2	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	500	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	2500	3	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	10000	50	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	4	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	1.2	<0.02	----	----	----	----
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	2.8	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.04	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										



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Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		Sampling date/time				
				Lower Limit	Upper Limit	BH5_04	06-MAY-2015 15:00	EM1504725-013	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	5	<0.5	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	1.2	<0.04	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.04	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.04	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.04	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	650	<10	----	----	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	10000	<50	----	----	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		BH5_04	----	----	----	----
				Sampling date/time	Guideline					
				Lower Limit	Upper Limit	06-MAY-2015 15:00	----	----	----	----
						EM1504725-013	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001-PR/EA001	0.1	pH Unit	2	12.5	7.2	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EN69/EG005T	5	mg/kg	----	2000	<5	----	----	----	----
Cadmium	EN69/EG005T	1	mg/kg	----	400	<1	----	----	----	----
Copper	EN69/EG005T	5	mg/kg	----	20000	6	----	----	----	----
Lead	EN69/EG005T	5	mg/kg	----	6000	37	----	----	----	----
Molybdenum	EN69/EG005T	2	mg/kg	----	4000	<2	----	----	----	----
Nickel	EN69/EG005T	2	mg/kg	----	12000	4	----	----	----	----
Selenium	EN69/EG005T	5	mg/kg	----	200	<5	----	----	----	----
Silver	EN69/EG005T	2	mg/kg	----	720	<2	----	----	----	----
Zinc	EN69/EG005T	5	mg/kg	----	140000	42	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EN69/EG035T	0.1	mg/kg	----	300	0.2	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048PR/EG048G	0.5	mg/kg	----	2000	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	CN-PR/EK026SF	1	mg/kg	----	10000	3	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T-PR/EK040T	40	mg/kg	----	40000	50	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	ORG16-UT/EP074-UT	0.2	mg/kg	----	16	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	ORG16-UT/EP074-UT	0.02	mg/kg	----	4.8	<0.02	----	----	----	----
Hexachlorobutadiene	ORG16-UT/EP074-UT	0.02	mg/kg	----	11	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.04	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	ORG17A-EM/EP075-EM	0.5	mg/kg	----	20	<0.5	----	----	----	----



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Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SILT

Compound	Method	LOR	Unit	Client sample ID		BH5_0.4	----	----	----	----
				Sampling date/time						
				Lower Limit	Upper Limit					
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides										
Heptachlor	ORG17A-EM/EP075-EM	0.03	mg/kg	----	4.8	<0.04	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.04	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.04	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.04	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	ORG16-UT/EP074-UT	10	mg/kg	----	2600	<10	----	----	----	----
C10 - C36 Fraction (sum)	ORG17/EP071-EM	50	mg/kg	----	40000	<50	----	----	----	----

Note: Red shading is applied where the result is equal to or greater than the Guideline Limit.

QUALITY CONTROL REPORT

Work Order	: EM1504725	Page	: 1 of 23
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Order number	: ----	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



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.

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



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Laboratory 825

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Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
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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 (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 3925604)									
EM1504667-004	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.2	5.1	1.9	0% - 20%
EM1504725-007	BH3_0.3	EA001: pH (CaCl2)	----	0.1	pH Unit	8.1	8.2	1.2	0% - 20%
EA055: Moisture Content (QC Lot: 3925589)									
EM1504725-001	BH1_0.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.8	0.0	0% - 50%
EM1504725-010	BH4_0.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	10.1	11.2	10.3	0% - 50%
EA055: Moisture Content (QC Lot: 3925590)									
EM1504725-020	BH7_0.4	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.4	<1.0	29.9	No Limit
EM1504726-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.8	6.6	11.9	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 3926776)									
EM1504675-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	5	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	12	50.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	96	84	13.3	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	6	<5	20.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	114	98	15.1	0% - 20%
EM1504725-001	BH1_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	18	17.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	50	6.9	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	720	693	3.8	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	15	14	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	592	577	2.6	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3926778)									
EM1504725-010	BH4_0.3	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	107	117	9.2	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit



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 (%)
EG005T: Total Metals by ICP-AES (QC Lot: 3926778) - continued									
EM1504725-010	BH4_0.3	EG005T: Copper	7440-50-8	5	mg/kg	31	33	6.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	52	12.5	0% - 50%
EM1504725-019	BH7_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	55	53	4.0	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	10	51.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	32	29	9.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	256	215	17.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	10	8	26.2	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	281	307	8.9	0% - 20%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3926777)									
EM1504675-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1504725-001	BH1_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.4	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3926779)									
EM1504725-010	BH4_0.3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1504725-019	BH7_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.9	0.3	97.8	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3926443)									
EM1504725-001	BH1_0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504725-010	BH4_0.3	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3926444)									
EM1504725-021	BH7_0.65	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504731-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 3928236)									
EM1504667-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM1504725-007	BH3_0.3	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 3925534)									
EM1504667-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	90	0.0	No Limit
EM1504725-009	BH3_0.5	EK040T: Fluoride	16984-48-8	40	mg/kg	110	110	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3925577)									
EM1504667-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.7	<0.7	0.0	No Limit
EM1504725-013	BH5_0.4	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3925533) - continued									
EM1504725-001	BH1_0.2	EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit
		EM1504731-014	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01
EP074-UT: cis-1.2-Dichloroethene	156-59-2			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: 1.1.1-Trichloroethane	71-55-6			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: Carbon Tetrachloride	56-23-5			0.01	mg/kg	<0.01	<0.01	0.0	No Limit
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6			0.01	mg/kg	<0.01	<0.01	0.0	No Limit



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 (%)	
EP074I: Volatile Halogenated Compounds (QC Lot: 3925533) - continued										
EM1504731-014	Anonymous	EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit	
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit	
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit	
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925549)										
EM1504725-002	BH1_0.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EM1504725-017	BH6_0.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



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 (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925549) - continued										
EM1504725-017	BH6_0.3	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925552)										
EM1504725-021	BH7_0.65	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EM1504726-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	



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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925552) - continued									
EM1504726-004	Anonymous	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.37	<0.37	0.0	No Limit
EM1504725-013	BH5_0.4	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.07	<0.07	0.0	No Limit
EM1504667-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<15	<15	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<15	<15	0.0	No Limit
		EM1504725-013	BH5_0.4	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1
EP075-EM: 2-Methylphenol	95-48-7			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 3- & 4-Methylphenol	1319-77-3			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 2-Nitrophenol	88-75-5			1	mg/kg	<1	<1	0.0	No Limit
EP075-EM: 2.4-Dimethylphenol	105-67-9			1	mg/kg	<1	<1	0.0	No Limit



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 (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 3925575) - continued									
EM1504725-013	BH5_0.4	EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1504725-013	BH5_0.4	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 3925575)									
EM1504667-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.19	<0.19	0.0	No Limit



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 (%)
EP075I: Organochlorine Pesticides (QC Lot: 3925575) - continued									
EM1504667-004	Anonymous	EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.19	<0.19	0.0	No Limit
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.19	<0.19	0.0	No Limit		
EM1504725-013	BH5_0.4	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		

EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925533)

Page : 11 of 23
 Work Order : EM1504725
 Client : CITY OF PORT PHILLIP
 Project : CONTAMINATION ASSESSMENT



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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925533) - continued									
EM1504725-001	BH1_0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925548)									
EM1504725-001	BH1_0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3925553)									
EM1504725-027	BH10_0.15	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925533)									
EM1504725-001	BH1_0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EM1504731-014	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925548)									
EM1504725-001	BH1_0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	110	140	23.2	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3925553)									
EM1504725-027	BH10_0.15	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 3926776)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.4	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	97.6	90	116	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	93.6	85	107	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	104	85	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	98.0	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.2	93	109	
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.10 mg/kg	97.1	80	108	
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	100	94	114	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.1	89	111	
EG005T: Total Metals by ICP-AES (QCLot: 3926778)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.2	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	93.2	90	116	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	95.0	85	107	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	108	85	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	94.1	89	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.4	93	109	
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.10 mg/kg	99.5	80	108	
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	110	94	114	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.5	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.7	85	103	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.5	85	103	
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443) - continued								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	91.5	80	120
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.4	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	103	82	106
EK040T: Fluoride Total (QCLot: 3925534)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	83.4	75	108
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	110	55	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	91.2	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	91.6	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.3	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	90.7	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.5	70	116
EP074H: Naphthalene (QCLot: 3925533)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	86.1	70	130
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	100	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	63	133
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	86.6	65	131
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	71.1	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	89.1	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.1	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.8	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	84.5	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.4	74	122



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074I: Volatile Halogenated Compounds (QCLot: 3925533) - continued									
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	65	123	
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.2	69	119	
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	71	125	
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.6	61	125	
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	100	70	130	
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.6	62	122	
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.9	65	123	
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	80.0	53	127	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925549)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	106	65	119	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	108	61	125	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	103	68	114	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	92.5	62	120	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	69	113	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	105	68	116	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	112	67	115	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	111	66	116	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	99.9	62	116	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	112	63	119	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	109	64	114	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	105	67	115	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	106	64	114	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	106	62	116	
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	103	62	114	
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	101	59	117	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	99.6	65	119	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	97.3	61	125	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	111	68	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552) - continued									
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	# 126	62	120	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	103	69	113	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	102	68	116	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	111	67	115	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	112	66	116	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	109	62	116	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	117	63	119	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	75.0	64	114	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	79.0	67	115	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	67.0	64	114	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	101	62	116	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	89.9	62	114	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	77.3	59	117	
EP075A: Phenolic Compounds (Halogenated) (QCLot: 3925575)									
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	0.5 mg/kg	76.1	27	125	
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	0.5 mg/kg	83.2	30	136	
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	0.5 mg/kg	80.6	35	121	
EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	0.5 mg/kg	98.6	43	125	
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	42	120	
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	42	124	
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	0.5 mg/kg	96.8	30	126	
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	1.0 mg/kg	93.7	44	124	
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	0.5 mg/kg	110	15	124	
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575)									
EP075-EM: Phenol	108-95-2	0.1	mg/kg	<1	0.5 mg/kg	77.7	26	121	
EP075-EM: 2-Methylphenol	95-48-7	0.1	mg/kg	<1	0.5 mg/kg	78.5	25	133	
EP075-EM: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<1	1 mg/kg	79.8	29	130	
EP075-EM: 2-Nitrophenol	88-75-5	0.1	mg/kg	<1	0.5 mg/kg	79.1	32	136	
EP075-EM: 2,4-Dimethylphenol	105-67-9	0.1	mg/kg	<1	0.5 mg/kg	78.1	10	142	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575) - continued									
EP075-EM: 2,4-Dinitrophenol	51-28-5	0.1	mg/kg	<5	3 mg/kg	88.2	23	125	
EP075-EM: 4-Nitrophenol	100-02-7	0.1	mg/kg	<5	3 mg/kg	113	43	133	
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	0.1	mg/kg	<5	3 mg/kg	111	12	125	
EP075-EM: Dinoseb	88-85-7	0.1	mg/kg	<5	3 mg/kg	114	35	123	
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	0.1	mg/kg	<5	2.5 mg/kg	113	10	132	
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)									
EP075-EM: Naphthalene	91-20-3	0.1	mg/kg	<0.5	0.5 mg/kg	81.6	38	120	
EP075-EM: Acenaphthene	83-32-9	0.1	mg/kg	<0.5	0.5 mg/kg	94.7	46	122	
EP075-EM: Acenaphthylene	208-96-8	0.1	mg/kg	<0.5	0.5 mg/kg	99.4	39	127	
EP075-EM: Fluorene	86-73-7	0.1	mg/kg	<0.5	0.5 mg/kg	104	51	125	
EP075-EM: Phenanthrene	85-01-8	0.1	mg/kg	<0.5	0.5 mg/kg	116	57	127	
EP075-EM: Anthracene	120-12-7	0.1	mg/kg	<0.5	0.5 mg/kg	116	55	127	
EP075-EM: Fluoranthene	206-44-0	0.1	mg/kg	<0.5	0.5 mg/kg	123	57	131	
EP075-EM: Pyrene	129-00-0	0.1	mg/kg	<0.5	0.5 mg/kg	123	57	131	
EP075-EM: Benz(a)anthracene	56-55-3	0.1	mg/kg	<0.5	0.5 mg/kg	123	56	132	
EP075-EM: Chrysene	218-01-9	0.1	mg/kg	<0.5	0.5 mg/kg	126	58	134	
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.1	mg/kg	<0.5	1.0 mg/kg	118	55	133	
EP075-EM: Benzo(a)pyrene	50-32-8	0.1	mg/kg	<0.5	0.5 mg/kg	118	51	135	
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.1	mg/kg	<0.5	0.5 mg/kg	105	55	137	
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.1	mg/kg	<0.5	0.5 mg/kg	106	54	136	
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.1	mg/kg	<0.5	0.5 mg/kg	102	55	137	
EP075I: Organochlorine Pesticides (QCLot: 3925575)									
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	0.5 mg/kg	114	54	130	
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	0.5 mg/kg	108	54	130	
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	0.5 mg/kg	120	54	134	
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	0.5 mg/kg	118	54	132	
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	0.5 mg/kg	120	55	131	
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	0.5 mg/kg	112	54	128	
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	0.5 mg/kg	117	54	128	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 3925575) - continued								
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	0.5 mg/kg	123	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	0.5 mg/kg	125	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	0.5 mg/kg	122	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	0.5 mg/kg	125	53	133
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	126	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	0.5 mg/kg	124	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	0.5 mg/kg	43.5	16	178
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	0.5 mg/kg	123	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	0.5 mg/kg	126	56	138
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	130	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	0.5 mg/kg	126	51	133
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	0.5 mg/kg	112	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	0.5 mg/kg	112	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	73.8	64	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925548)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	658 mg/kg	93.7	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3160 mg/kg	93.0	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1448 mg/kg	92.7	75	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925553)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	658 mg/kg	104	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3160 mg/kg	101	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1448 mg/kg	102	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925533)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	72.5	64	120
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548)								
EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	1051 mg/kg	90.6	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	4124 mg/kg	94.0	77	127



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548) - continued								
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	161 mg/kg	92.0	43	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925553)								
EP071-EM: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	1051 mg/kg	104	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	4124 mg/kg	103	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	161 mg/kg	80.5	43	123

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			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3926776)							
EM1504718-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	97.6	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	88.7	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.6	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	93.8	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.8	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	89.7	74	128
EG005T: Total Metals by ICP-AES (QCLot: 3926778)							
EM1504725-011	BH4_0.4	EG005T: Arsenic	7440-38-2	50 mg/kg	106	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	100	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	100	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	88.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	97.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)							
EM1504718-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	98.0	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)							
EM1504725-011	BH4_0.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.4	76	116



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)							
EM1504725-002	BH1_0.4	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	84.6	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)							
EM1504725-006	BH2_0.6	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.9	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)							
EM1504667-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	77	113
EK040T: Fluoride Total (QCLot: 3925534)							
EM1504667-010	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	89.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)							
EM1504725-001	BH1_0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	79.6	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	110	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	110	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	107	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	111	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	58	134
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925549)							
EM1504725-003	BH2_0.2	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	104	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	128	52	148
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925552)							
EM1504725-022	BH8_0.3	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	# 119	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	138	52	148
EP075A: Phenolic Compounds (Halogenated) (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	75.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.5 mg/kg	90.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	25.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	74.0	31.5	134
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	66.5	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)							
EM1504667-026	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	86.4	46	138
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	108	26.5	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)							
EM1504725-006	BH2_0.6						



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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533) - continued							
EM1504725-006	BH2_0.6	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	66.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925548)							
EM1504725-006	BH2_0.6	EP071-EM: C10 - C14 Fraction	----	658 mg/kg	101	53	123
		EP071-EM: C15 - C28 Fraction	----	3160 mg/kg	99.1	70	124
		EP071-EM: C29 - C36 Fraction	----	1448 mg/kg	98.6	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925553)							
EM1504725-029	BH10_0.5	EP071-EM: C10 - C14 Fraction	----	658 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3160 mg/kg	97.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1448 mg/kg	97.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925533)							
EM1504725-006	BH2_0.6	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	64.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925548)							
EM1504725-006	BH2_0.6	EP071-EM: >C10 - C16 Fraction	>C10_C16	1051 mg/kg	97.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	4124 mg/kg	100	67	121
		EP071-EM: >C34 - C40 Fraction	----	161 mg/kg	93.2	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3925553)							
EM1504725-029	BH10_0.5	EP071-EM: >C10 - C16 Fraction	>C10_C16	1051 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	4124 mg/kg	99.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	161 mg/kg	71.4	44	126

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3925533)										
EM1504725-006	BH2_0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	110	----	50	138	----	----
		EP074-UT: Toluene	108-88-3	2 mg/kg	110	----	56	134	----	----
EP074I: Volatile Halogenated Compounds (QCLot: 3925533)										
EM1504725-006	BH2_0.6	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	107	----	26	141	----	----
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	111	----	50	134	----	----
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	----	58	134	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3925533)										



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 3925575) - continued										
EM1504667-026	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	74.0	----	31.5	134	----	----
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	66.5	----	13	129	----	----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 3925575)										
EM1504667-026	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	86.4	----	46	138	----	----
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	108	----	26.5	169	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3925577)										
EM1504725-001	BH1_0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	79.6	----	36	152	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926443)										
EM1504725-002	BH1_0.4	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	84.6	----	58	114	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3926444)										
EM1504725-006	BH2_0.6	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.9	----	58	114	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3926776)										
EM1504718-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.4	----	78	124	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.2	----	84	116	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	97.6	----	82	124	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	88.7	----	76	124	----	----
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.6	----	79	117	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	93.8	----	78	120	----	----
		EG005T: Selenium	7782-49-2	50 mg/kg	81.8	----	71	125	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	89.7	----	74	128	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926777)										
EM1504718-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	98.0	----	76	116	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3926778)										
EM1504725-011	BH4_0.4	EG005T: Arsenic	7440-38-2	50 mg/kg	106	----	78	124	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	----	84	116	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	100	----	82	124	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	95.4	----	76	124	----	----
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.7	----	79	117	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	78	120	----	----
		EG005T: Selenium	7782-49-2	50 mg/kg	88.3	----	71	125	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	97.0	----	74	128	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3926779)										
EM1504725-011	BH4_0.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	94.4	----	76	116	----	----

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 Work Order : EM1504725
 Client : CITY OF PORT PHILLIP
 Project : CONTAMINATION ASSESSMENT



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3928236)										
EM1504667-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	----	77	113	----	----



INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EM1504725	Page	: 1 of 13
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Carol Walsh
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: carol.walsh@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9608
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: CONTAMINATION ASSESSMENT	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: CARLISLE ST, CARPARKS	Date Samples Received	: 06-MAY-2015
C-O-C number	: CSCP	Issue Date	: 13-MAY-2015
Sampler	: DP	No. of samples received	: 29
Order number	: ----	No. of samples analysed	: 29
Quote number	: MEBQ/125/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	08-MAY-2015	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3,	06-MAY-2015	----	----	----	07-MAY-2015	20-MAY-2015	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	11-MAY-2015	02-NOV-2015	✓	12-MAY-2015	02-NOV-2015	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	11-MAY-2015	03-JUN-2015	✓	12-MAY-2015	03-JUN-2015	✓



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	
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH1_0.2, BH2_0.2, BH2_0.4, BH3_0.3, BH3_0.5, BH4_0.4, BH5_0.4, BH5_0.7, BH6_0.3, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.15, BH10_0.5	BH1_0.4, BH2_0.3, BH2_0.6, BH3_0.4, BH4_0.3, BH5_0.3, BH5_0.6, BH6_0.2, BH7_0.15, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5, BH10_0.3	06-MAY-2015	08-MAY-2015	03-JUN-2015	✓	08-MAY-2015	15-MAY-2015	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	11-MAY-2015	20-MAY-2015	✓	12-MAY-2015	25-MAY-2015	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	03-JUN-2015	✓	11-MAY-2015	03-JUN-2015	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15	BH2_0.6, BH3_0.5, BH6_0.2,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
Soil Glass Jar - Unpreserved (EP071-EM) BH10_0.15,	BH10_0.5	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	09-MAY-2015	17-JUN-2015	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	13-MAY-2015	✓	08-MAY-2015	13-MAY-2015	✓



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	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH1_0.4, BH2_0.3, BH3_0.4, BH4_0.4, BH5_0.6, BH6_0.3, BH7_0.4, BH8_0.3, BH9_0.15, BH9_0.5,	BH2_0.2, BH2_0.4, BH4_0.3, BH5_0.3, BH5_0.7, BH7_0.2, BH7_0.65, BH8_0.5, BH9_0.25, BH10_0.3	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	11-MAY-2015	17-JUN-2015	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH1_0.2, BH3_0.3, BH5_0.4, BH7_0.15, BH10_0.5	BH2_0.6, BH3_0.5, BH6_0.2, BH10_0.15,	06-MAY-2015	08-MAY-2015	20-MAY-2015	✓	08-MAY-2015	17-JUN-2015	✓



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	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	30	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
PAH/Phenols (SIM)	EP075(SIM)	2	30	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071-EM	2	9	22.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
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 (SnCl ₂)(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 SnCl ₂ 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)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In-house, APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	Rayment and Higginson 4B1 (mod.), 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	(In-house) Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17A-EM	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	4742876-001	----	Fluorene	86-73-7	126 %	62-120%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1504725-022	BH8_0.3	Acenaphthene	83-32-9	119 %	67-117%	Recovery greater than upper data quality objective

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	Phenol-d6	13127-88-3	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences



Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	2-Chlorophenol-D4	93951-73-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-016	BH6_0.2	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-018	BH7_0.15	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-001	BH1_0.2	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075S: Acid Extractable Surrogates	EM1504725-007	BH3_0.3	2.4.6-Tribromophenol	118-79-6	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	Nitrobenzene-D5	4165-60-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	1.2-Dichlorobenzene-D4	2199-69-1	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences



Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	2-Fluorobiphenyl	321-60-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	Anthracene-d10	1719-06-8	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-016	BH6_0.2	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-018	BH7_0.15	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-001	BH1_0.2	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
EP075T: Base/Neutral Extractable Surrogates	EM1504725-007	BH3_0.3	4-Terphenyl-d14	1718-51-0	Not Determined	----	Surrogate recovery not determined due to (target or non-target) matrix interferences

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1818991

Client : SENVERSA PTY LTD
Contact : SAM O'CONNOR
Address : Level 6, 15 William St Melbourne VICTORIA, AUSTRALIA 3000
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
E-mail : sam.oconnor@senversa.com.au
Telephone : ----
Facsimile : ----
Project : M17003
Order number :
C-O-C number : ----
Site : ----
Sampler : SAM O'CONNOR
Laboratory E-mail : Larissa.burns@alsglobal.com
Telephone : +6138549 9644
Facsimile : +61-3-8549 9626
Page : 1 of 2
Quote number : EM2017SENV0009 (EN/333 (secondary work only))
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 26-Nov-2018 08:20
Client Requested Due Date : 03-Dec-2018
Issue Date : 26-Nov-2018
Scheduled Reporting Date : 03-Dec-2018

Delivery Details

Mode of Delivery : Carrier
No. of coolers/boxes : 2
Receipt Detail :
Security Seal : Not Available
Temperature : 2.6°C - Ice present
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Sample(s) received in non-ALS container(s).
Please direct any queries related to sample condition / numbering / breakages to Client Services.
Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
Analytical work for this work order will be conducted at ALS Springvale.
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID Client sampling date / time Client sample ID

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG035F Dissolved Mercury	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK058G Nitrate as N by Discrete Analyser	WATER - W-23 SVOC/VOC
EM1818991-001	22-Nov-2018 00:00	QA2	✓	✓	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

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

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EK055G: Ammonia as N by Discrete analyser								
QA2		Clear Plastic Bottle - Natural	----	23-Nov-2018	26-Nov-2018	✘	----	----
EK057G: Nitrite as N by Discrete Analyser								
QA2		Clear Plastic Bottle - Natural	----	24-Nov-2018	26-Nov-2018	✘	----	----
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser								
QA2		Clear Plastic Bottle - Natural	----	24-Nov-2018	26-Nov-2018	✘	----	----

Requested Deliverables

SAM O'CONNOR

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

SUPPLIER ACCOUNTS

- A4 - AU Tax Invoice (INV)	Email	supplieraccounts@senversa.com.au
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CERTIFICATE OF ANALYSIS

Work Order : **EM1818991**
Client : **SENVERSA PTY LTD**
Contact : **SAM O'CONNOR**
Address : **Level 6, 15 William St
Melbourne VICTORIA, AUSTRALIA 3000**
Telephone : **----**
Project : **M17003**
Order number : **----**
C-O-C number : **----**
Sampler : **SAM O'CONNOR**
Site : **----**
Quote number : **EN/333 (secondary work only)**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 10
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9644
Date Samples Received : 26-Nov-2018 08:20
Date Analysis Commenced : 27-Nov-2018
Issue Date : 29-Nov-2018 15:35



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	712	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.001	----	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.002	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.088	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.006	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.048	----	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.11	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.07	----	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.39	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	3.59	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	3.98	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
Styrene	100-42-5	5	µg/L	<5	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
Isopropylbenzene	98-82-8	5	µg/L	<5	----	----	----	----	----
n-Propylbenzene	103-65-1	5	µg/L	<5	----	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	----	----	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L	<5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	----	----	----	----	
tert-Butylbenzene	98-06-6	5	µg/L	<5	----	----	----	----	
p-Isopropyltoluene	99-87-6	5	µg/L	<5	----	----	----	----	
n-Butylbenzene	104-51-8	5	µg/L	<5	----	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L	<50	----	----	----	----	
2-Butanone (MEK)	78-93-3	50	µg/L	<50	----	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	----	----	----	----	
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	----	----	----	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L	<5	----	----	----	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L	<5	----	----	----	----	
1,2-Dichloropropane	78-87-5	5	µg/L	<5	----	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	----	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	----	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	----	----	----	
Chloromethane	74-87-3	50	µg/L	<50	----	----	----	----	
Vinyl chloride	75-01-4	50	µg/L	<50	----	----	----	----	
Bromomethane	74-83-9	50	µg/L	<50	----	----	----	----	
Chloroethane	75-00-3	50	µg/L	<50	----	----	----	----	
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	----	----	----	
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	----	----	----	
Iodomethane	74-88-4	5	µg/L	<5	----	----	----	----	
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	----	----	----	
1,1-Dichloroethane	75-34-3	5	µg/L	<5	----	----	----	----	
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	----	----	----	
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	----	----	----	
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	----	----	----	----	
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	----	----	----	
1,2-Dichloroethane	107-06-2	5	µg/L	<5	----	----	----	----	
Trichloroethene	79-01-6	5	µg/L	<5	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	5	µg/L	<5	----	----	----	----	
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	----	----	----	
1.3-Dichloropropane	142-28-9	5	µg/L	<5	----	----	----	----	
Tetrachloroethene	127-18-4	5	µg/L	<5	----	----	----	----	
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	----	----	----	
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	----	----	----	----	
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	----	----	----	----	
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	----	----	----	
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	----	----	----	----	
Pentachloroethane	76-01-7	5	µg/L	<5	----	----	----	----	
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	----	----	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L	<5	----	----	----	----	
Bromobenzene	108-86-1	5	µg/L	<5	----	----	----	----	
2-Chlorotoluene	95-49-8	5	µg/L	<5	----	----	----	----	
4-Chlorotoluene	106-43-4	5	µg/L	<5	----	----	----	----	
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	----	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L	<5	----	----	----	----	
Bromodichloromethane	75-27-4	5	µg/L	<5	----	----	----	----	
Dibromochloromethane	124-48-1	5	µg/L	<5	----	----	----	----	
Bromoform	75-25-2	5	µg/L	<5	----	----	----	----	
EP075A: Phenolic Compounds									
Phenol	108-95-2	2	µg/L	<2	----	----	----	----	
2-Chlorophenol	95-57-8	2	µg/L	<2	----	----	----	----	
2-Methylphenol	95-48-7	2	µg/L	<2	----	----	----	----	
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	----	----	----	
2-Nitrophenol	88-75-5	2	µg/L	<2	----	----	----	----	
2.4-Dimethylphenol	105-67-9	2	µg/L	<2	----	----	----	----	
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	----	----	----	
2.6-Dichlorophenol	87-65-0	2	µg/L	<2	----	----	----	----	
4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	----	----	----	----	
2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	----	----	----	----	
2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075A: Phenolic Compounds - Continued									
Pentachlorophenol	87-86-5	4	µg/L	<4	----	----	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	2	µg/L	<2	----	----	----	----	
2-Methylnaphthalene	91-57-6	2	µg/L	<2	----	----	----	----	
2-Chloronaphthalene	91-58-7	2	µg/L	<2	----	----	----	----	
Acenaphthylene	208-96-8	2	µg/L	<2	----	----	----	----	
Acenaphthene	83-32-9	2	µg/L	<2	----	----	----	----	
Fluorene	86-73-7	2	µg/L	<2	----	----	----	----	
Phenanthrene	85-01-8	2	µg/L	<2	----	----	----	----	
Anthracene	120-12-7	2	µg/L	<2	----	----	----	----	
Fluoranthene	206-44-0	2	µg/L	<2	----	----	----	----	
Pyrene	129-00-0	2	µg/L	<2	----	----	----	----	
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	----	----	----	----	
Benzo(a)anthracene	56-55-3	2	µg/L	<2	----	----	----	----	
Chrysene	218-01-9	2	µg/L	<2	----	----	----	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	----	----	----	----	
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	----	----	----	----	
Benzo(a)pyrene	50-32-8	2	µg/L	<2	----	----	----	----	
3-Methylcholanthrene	56-49-5	2	µg/L	<2	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	----	----	----	----	
^ Sum of PAHs	----	2	µg/L	<2	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----	
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	2	µg/L	<2	----	----	----	----	
Diethyl phthalate	84-66-2	2	µg/L	<2	----	----	----	----	
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	----	----	----	----	
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	----	----	----	----	
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	----	----	----	----	
Di-n-octylphthalate	117-84-0	2	µg/L	<2	----	----	----	----	
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075D: Nitrosamines - Continued									
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	----	----	----	----	
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	----	----	----	----	
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	----	----	----	----	
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	----	----	----	----	
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	----	----	----	----	
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	----	----	----	----	
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	----	----	----	----	
Methapyrilene	91-80-5	2	µg/L	<2	----	----	----	----	
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	2	µg/L	<2	----	----	----	----	
Acetophenone	98-86-2	2	µg/L	<2	----	----	----	----	
Nitrobenzene	98-95-3	2	µg/L	<2	----	----	----	----	
Isophorone	78-59-1	2	µg/L	<2	----	----	----	----	
2,6-Dinitrotoluene	606-20-2	4	µg/L	<4	----	----	----	----	
2,4-Dinitrotoluene	121-14-2	4	µg/L	<4	----	----	----	----	
1-Naphthylamine	134-32-7	2	µg/L	<2	----	----	----	----	
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	----	----	----	----	
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	----	----	----	----	
Azobenzene	103-33-3	2	µg/L	<2	----	----	----	----	
1,3,5-Trinitrobenzene	99-35-4	2	µg/L	<2	----	----	----	----	
Phenacetin	62-44-2	2	µg/L	<2	----	----	----	----	
4-Aminobiphenyl	92-67-1	2	µg/L	<2	----	----	----	----	
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	----	----	----	----	
Pronamide	23950-58-5	2	µg/L	<2	----	----	----	----	
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	----	----	----	----	
Chlorobenzilate	510-15-6	2	µg/L	<2	----	----	----	----	
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	----	----	----	----	
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	----	----	----	----	
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	----	----	----	----	
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	----	----	----	----	
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	2	µg/L	<2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075G: Chlorinated Hydrocarbons - Continued									
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	----	----	----	----	
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	----	----	----	----	
Hexachloroethane	67-72-1	2	µg/L	<2	----	----	----	----	
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	----	----	----	----	
Hexachloropropylene	1888-71-7	2	µg/L	<2	----	----	----	----	
Hexachlorobutadiene	87-68-3	2	µg/L	<2	----	----	----	----	
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	----	----	----	----	
Pentachlorobenzene	608-93-5	2	µg/L	<2	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	----	----	----	----	
EP075H: Anilines and Benzidines									
Aniline	62-53-3	2	µg/L	<2	----	----	----	----	
4-Chloroaniline	106-47-8	2	µg/L	<2	----	----	----	----	
2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----	
3-Nitroaniline	99-09-2	4	µg/L	<4	----	----	----	----	
Dibenzofuran	132-64-9	2	µg/L	<2	----	----	----	----	
4-Nitroaniline	100-01-8	2	µg/L	<2	----	----	----	----	
Carbazole	86-74-8	2	µg/L	<2	----	----	----	----	
3,3'-Dichlorobenzidine	91-94-1	2	µg/L	<2	----	----	----	----	
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	2	µg/L	<2	----	----	----	----	
beta-BHC	319-85-7	2	µg/L	<2	----	----	----	----	
gamma-BHC	58-89-9	2	µg/L	<2	----	----	----	----	
delta-BHC	319-86-8	2	µg/L	<2	----	----	----	----	
Heptachlor	76-44-8	2	µg/L	<2	----	----	----	----	
Aldrin	309-00-2	2	µg/L	<2	----	----	----	----	
Heptachlor epoxide	1024-57-3	2	µg/L	<2	----	----	----	----	
alpha-Endosulfan	959-98-8	2	µg/L	<2	----	----	----	----	
4,4'-DDE	72-55-9	2	µg/L	<2	----	----	----	----	
Dieldrin	60-57-1	2	µg/L	<2	----	----	----	----	
Endrin	72-20-8	2	µg/L	<2	----	----	----	----	
beta-Endosulfan	33213-65-9	2	µg/L	<2	----	----	----	----	
4,4'-DDD	72-54-8	2	µg/L	<2	----	----	----	----	
Endosulfan sulfate	1031-07-8	2	µg/L	<2	----	----	----	----	
4,4'-DDT	50-29-3	4	µg/L	<4	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				22-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818991-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075I: Organochlorine Pesticides - Continued									
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	4	µg/L	<4	----	----	----	----	
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	2	µg/L	<2	----	----	----	----	
Dimethoate	60-51-5	2	µg/L	<2	----	----	----	----	
Diazinon	333-41-5	2	µg/L	<2	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	----	----	----	----	
Malathion	121-75-5	2	µg/L	<2	----	----	----	----	
Fenthion	55-38-9	2	µg/L	<2	----	----	----	----	
Chlorpyrifos	2921-88-2	2	µg/L	<2	----	----	----	----	
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	----	----	----	----	
Chlorfenvinphos	470-90-6	2	µg/L	<2	----	----	----	----	
Prothiofos	34643-46-4	2	µg/L	<2	----	----	----	----	
Ethion	563-12-2	2	µg/L	<2	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%	99.3	----	----	----	----	
Toluene-D8	2037-26-5	5	%	90.9	----	----	----	----	
4-Bromofluorobenzene	460-00-4	5	%	94.7	----	----	----	----	
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%	33.2	----	----	----	----	
Phenol-d6	13127-88-3	2	%	13.9	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	2	%	43.7	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	2	%	59.2	----	----	----	----	
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%	61.3	----	----	----	----	
1,2-Dichlorobenzene-D4	2199-69-1	2	%	44.4	----	----	----	----	
2-Fluorobiphenyl	321-60-8	2	%	60.6	----	----	----	----	
Anthracene-d10	1719-06-8	2	%	84.9	----	----	----	----	
4-Terphenyl-d14	1718-51-0	2	%	78.5	----	----	----	----	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	75
Phenol-d6	13127-88-3	10	65
2-Chlorophenol-D4	93951-73-6	21	103
2,4,6-Tribromophenol	118-79-6	22	120
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	24	116
1,2-Dichlorobenzene-D4	2199-69-1	23	99
2-Fluorobiphenyl	321-60-8	32	114
Anthracene-d10	1719-06-8	47	119
4-Terphenyl-d14	1718-51-0	44	124

QUALITY CONTROL REPORT

Work Order	: EM1818991	Page	: 1 of 11
Client	: SENVERSA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: SAM O'CONNOR	Contact	: Larissa Burns
Address	: Level 6, 15 William St Melbourne VICTORIA, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9644
Project	: M17003	Date Samples Received	: 26-Nov-2018
Order number	:	Date Analysis Commenced	: 27-Nov-2018
C-O-C number	: ----	Issue Date	: 29-Nov-2018
Sampler	: SAM O'CONNOR		
Site	: ----		
Quote number	: EN/333 (secondary work only)		
No. of samples received	: 1		
No. of samples analysed	: 1		



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

This Quality Control Report contains the following information:

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2058671)									
EM1818960-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9840	9390	4.68	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2059790)									
EM1818991-001	QA2	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.088	0.087	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.007	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.048	0.049	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.11	0.11	0.00	No Limit
EM1819031-009	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0003	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.030	0.031	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.018	0.018	0.00	0% - 50%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.119	0.119	0.00	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.19	0.19	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EG035F: Dissolved Mercury by FIMS (QC Lot: 2059788)										
EM1818944-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1819008-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2058802)										
EM1818885-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.68	0.63	6.69	0% - 20%	
EM1818797-022	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.26	0.26	0.00	0% - 20%	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2058807)										
EM1818989-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.03	0.00	No Limit	
EM1818761-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2058803)										
EM1818897-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.59	0.60	0.00	0% - 20%	
EM1818797-022	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.19	0.18	0.00	0% - 50%	
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2060215)										
EM1818879-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit	
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit	
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit	
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit	
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit	
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit	
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit	
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit			
EP074B: Oxygenated Compounds (QC Lot: 2060215)										
EM1818879-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit	
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit	
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit	
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit	
EP074C: Sulfonated Compounds (QC Lot: 2060215)										
EM1818879-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit	
EP074D: Fumigants (QC Lot: 2060215)										
EM1818879-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit	
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit	
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit	
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit	



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074D: Fumigants (QC Lot: 2060215) - continued									
EM1818879-001	Anonymous	EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2060215)									
EM1818879-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	8	7	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	7	8	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit		
EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 2060215)									
EM1818879-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2060215)									
EM1818879-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	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: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 2058671)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	94	107	
				<10	293 mg/L	104	90	110	
EG020F: Dissolved Metals by ICP-MS (QCLot: 2059790)									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	91	107	
EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	98.1	82	113	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.1	84	104	
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	93.6	83	106	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.6	82	103	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.4	83	105	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.5	83	105	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.3	82	106	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.9	82	109	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.8	85	109	
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	98.1	84	116	
EG035F: Dissolved Mercury by FIMS (QCLot: 2059788)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.6	76	114	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2058802)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	87	117	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2058807)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.1	92	111	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2058803)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.0	93	120	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2060215)									
EP074: Benzene	71-43-2	1	µg/L	<1	20 µg/L	91.7	76	122	
EP074: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.7	81	115	
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.4	78	116	
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	94.5	79	116	
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	88.1	79	114	
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	90.4	83	116	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	97.9	72	116	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	93.9	71	115	
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	94.2	72	114	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	98.6	72	114	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2060215) - continued									
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	92.8	74	112	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	99.8	73	114	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	98.2	70	115	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	98.6	62	116	
EP074B: Oxygenated Compounds (QCLot: 2060215)									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	91.3	73	126	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	99.9	68	136	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	94.9	76	127	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	96.7	71	131	
EP074C: Sulfonated Compounds (QCLot: 2060215)									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	79.7	55	123	
EP074D: Fumigants (QCLot: 2060215)									
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	93.3	67	122	
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	90.5	78	120	
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	92.5	70	118	
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	92.3	68	115	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	101	78	120	
EP074E: Halogenated Aliphatic Compounds (QCLot: 2060215)									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	95.8	62	140	
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	81.4	68	138	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	116	64	139	
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	102	48	130	
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	93.4	71	130	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	100	71	126	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.3	65	124	
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	104	27	120	
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	89.0	73	121	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	92.2	77	120	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	90.1	78	120	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	88.4	68	116	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	97.5	66	119	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	99.4	66	119	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	92.7	79	118	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	96.7	70	120	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	97.2	75	115	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.2	87	114	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	95.7	84	116	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	107	75	119	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 2060215) - continued									
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	96.1	75	112	
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	93.6	63	119	
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	93.2	54	119	
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	92.3	81	125	
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	105	81	125	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	99.3	62	110	
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	96.2	63	106	
EP074F: Halogenated Aromatic Compounds (QCLot: 2060215)									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	100	82	114	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	96.5	74	117	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	93.3	71	114	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	94.1	71	112	
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	101	74	118	
EP074G: Trihalomethanes (QCLot: 2060215)									
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	94.2	79	119	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	88.4	70	112	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	97.2	68	107	
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	95.9	62	108	
EP075A: Phenolic Compounds (QCLot: 2058620)									
EP075: Phenol	108-95-2	2	µg/L	<2	10 µg/L	34.4	20	48	
EP075: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	71.0	49	100	
EP075: 2-Methylphenol	95-48-7	2	µg/L	<2	10 µg/L	68.6	43	95	
EP075: 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2	10 µg/L	63.1	36	92	
EP075: 2-Nitrophenol	88-75-5	2	µg/L	<2	10 µg/L	76.2	47	111	
EP075: 2.4-Dimethylphenol	105-67-9	2	µg/L	<2	10 µg/L	82.6	49	110	
EP075: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	77.1	50	111	
EP075: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	79.8	53	108	
EP075: 4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	10 µg/L	80.4	51	109	
EP075: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	77.7	48	114	
EP075: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	76.8	48	115	
EP075: Pentachlorophenol	87-86-5	4	µg/L	<4	10 µg/L	42.2	14	124	
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2058620)									
EP075: Naphthalene	91-20-3	2	µg/L	<2	10 µg/L	87.2	55	108	
EP075: 2-Methylnaphthalene	91-57-6	2	µg/L	<2	10 µg/L	94.3	54	113	
EP075: 2-Chloronaphthalene	91-58-7	2	µg/L	<2	10 µg/L	90.2	54	112	
EP075: Acenaphthylene	208-96-8	2	µg/L	<2	10 µg/L	91.3	55	113	
EP075: Acenaphthene	83-32-9	2	µg/L	<2	10 µg/L	82.1	58	110	
EP075: Fluorene	86-73-7	2	µg/L	<2	10 µg/L	84.6	59	113	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
						LCS	Low	High	
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2058620) - continued									
EP075: Phenanthrene	85-01-8	2	µg/L	<2	10 µg/L	85.2	61	112	
EP075: Anthracene	120-12-7	2	µg/L	<2	10 µg/L	87.0	61	112	
EP075: Fluoranthene	206-44-0	2	µg/L	<2	10 µg/L	83.9	61	114	
EP075: Pyrene	129-00-0	2	µg/L	<2	10 µg/L	79.7	60	114	
EP075: N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	10 µg/L	80.4	55	119	
EP075: Benz(a)anthracene	56-55-3	2	µg/L	<2	10 µg/L	85.2	60	114	
EP075: Chrysene	218-01-9	2	µg/L	<2	10 µg/L	91.8	60	116	
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	20 µg/L	93.7	60	114	
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	10 µg/L	98.8	55	140	
EP075: Benzo(a)pyrene	50-32-8	2	µg/L	<2	10 µg/L	99.3	58	116	
EP075: 3-Methylcholanthrene	56-49-5	2	µg/L	<2	10 µg/L	84.7	48	119	
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	10 µg/L	75.5	58	114	
EP075: Dibenzo(a,h)anthracene	53-70-3	2	µg/L	<2	10 µg/L	78.0	57	115	
EP075: Benzo(g,h,i)perylene	191-24-2	2	µg/L	<2	10 µg/L	76.7	57	117	
EP075C: Phthalate Esters (QCLot: 2058620)									
EP075: Dimethyl phthalate	131-11-3	2	µg/L	<2	10 µg/L	93.6	56	117	
EP075: Diethyl phthalate	84-66-2	2	µg/L	<2	10 µg/L	87.7	61	115	
EP075: Di-n-butyl phthalate	84-74-2	2	µg/L	<2	10 µg/L	90.2	66	117	
EP075: Butyl benzyl phthalate	85-68-7	2	µg/L	<2	10 µg/L	87.0	61	116	
EP075: bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	10 µg/L	99.5	56	118	
EP075: Di-n-octylphthalate	117-84-0	2	µg/L	<2	10 µg/L	97.0	62	115	
EP075D: Nitrosamines (QCLot: 2058620)									
EP075: N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	10 µg/L	60.3	28	94	
EP075: N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	10 µg/L	74.5	45	110	
EP075: N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	10 µg/L	58.1	37	84	
EP075: N-Nitrosomorpholine	59-89-2	2	µg/L	<2	10 µg/L	60.6	33	81	
EP075: N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	10 µg/L	86.0	52	115	
EP075: N-Nitrosopiperidine	100-75-4	2	µg/L	<2	10 µg/L	77.6	48	112	
EP075: N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	10 µg/L	94.7	53	118	
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	10 µg/L	86.6	59	114	
EP075: Methapyrilene	91-80-5	2	µg/L	<2	10 µg/L	25.7	10	147	
EP075E: Nitroaromatics and Ketones (QCLot: 2058620)									
EP075: 2-Picoline	109-06-8	2	µg/L	<2	10 µg/L	63.9	20	105	
EP075: Acetophenone	98-86-2	2	µg/L	<2	10 µg/L	82.5	55	110	
EP075: Nitrobenzene	98-95-3	2	µg/L	<2	10 µg/L	85.9	51	111	
EP075: Isophorone	78-59-1	2	µg/L	<2	10 µg/L	84.3	54	113	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP075E: Nitroaromatics and Ketones (QCLot: 2058620) - continued								
EP075: 2,6-Dinitrotoluene	606-20-2	4	µg/L	<4	10 µg/L	89.3	55	116
EP075: 2,4-Dinitrotoluene	121-14-2	4	µg/L	<4	10 µg/L	80.3	57	111
EP075: 1-Naphthylamine	134-32-7	2	µg/L	<2	10 µg/L	67.5	11	119
EP075: 4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	10 µg/L	91.1	42	148
EP075: 5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	10 µg/L	85.4	51	121
EP075: Azobenzene	103-33-3	2	µg/L	<2	10 µg/L	91.3	58	114
EP075: 1,3,5-Trinitrobenzene	99-35-4	2	µg/L	<2	10 µg/L	75.0	37	123
EP075: Phenacetin	62-44-2	2	µg/L	<2	10 µg/L	73.1	47	102
EP075: 4-Aminobiphenyl	92-67-1	2	µg/L	<2	10 µg/L	81.7	24	149
EP075: Pentachloronitrobenzene	82-68-8	2	µg/L	<2	10 µg/L	85.9	57	114
EP075: Pronamide	23950-58-5	2	µg/L	<2	10 µg/L	88.0	62	113
EP075: Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	10 µg/L	82.5	40	122
EP075: Chlorobenzilate	510-15-6	2	µg/L	<2	10 µg/L	85.9	58	116
EP075F: Haloethers (QCLot: 2058620)								
EP075: Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	10 µg/L	80.7	51	108
EP075: Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	10 µg/L	83.7	53	114
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	10 µg/L	84.6	58	113
EP075: 4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	10 µg/L	86.0	56	115
EP075G: Chlorinated Hydrocarbons (QCLot: 2058620)								
EP075: 1,4-Dichlorobenzene	106-46-7	2	µg/L	<2	10 µg/L	75.9	52	103
EP075: 1,3-Dichlorobenzene	541-73-1	2	µg/L	<2	10 µg/L	76.7	52	104
EP075: 1,2-Dichlorobenzene	95-50-1	2	µg/L	<2	10 µg/L	76.2	51	106
EP075: Hexachloroethane	67-72-1	2	µg/L	<2	10 µg/L	78.2	49	106
EP075: 1,2,4-Trichlorobenzene	120-82-1	2	µg/L	<2	10 µg/L	77.6	50	111
EP075: Hexachloropropylene	1888-71-7	2	µg/L	<2	10 µg/L	86.7	47	110
EP075: Hexachlorobutadiene	87-68-3	2	µg/L	<2	10 µg/L	87.6	51	110
EP075: Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	10 µg/L	76.2	13	129
EP075: Pentachlorobenzene	608-93-5	2	µg/L	<2	10 µg/L	83.1	55	112
EP075: Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	20 µg/L	84.3	57	115
EP075H: Anilines and Benzidines (QCLot: 2058620)								
EP075: Aniline	62-53-3	2	µg/L	<2	10 µg/L	66.5	14	110
EP075: 4-Chloroaniline	106-47-8	2	µg/L	<2	10 µg/L	81.4	15	126
EP075: 2-Nitroaniline	88-74-4	4	µg/L	<4	10 µg/L	89.5	53	112
EP075: 3-Nitroaniline	99-09-2	4	µg/L	<4	10 µg/L	82.2	40	116
EP075: Dibenzofuran	132-64-9	2	µg/L	<2	10 µg/L	85.6	58	112
EP075: 4-Nitroaniline	100-01-8	2	µg/L	<2	10 µg/L	62.1	44	114
EP075: Carbazole	86-74-8	2	µg/L	<2	10 µg/L	88.8	61	116
EP075: 3,3'-Dichlorobenzidine	91-94-1	2	µg/L	<2	10 µg/L	93.1	42	135



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075I: Organochlorine Pesticides (QCLot: 2058620)									
EP075: alpha-BHC	319-84-6	2	µg/L	<2	10 µg/L	88.1	56	116	
EP075: beta-BHC	319-85-7	2	µg/L	<2	10 µg/L	89.2	58	115	
EP075: gamma-BHC	58-89-9	2	µg/L	<2	10 µg/L	89.5	59	115	
EP075: delta-BHC	319-86-8	2	µg/L	<2	10 µg/L	89.1	60	114	
EP075: Heptachlor	76-44-8	2	µg/L	<2	10 µg/L	86.9	56	114	
EP075: Aldrin	309-00-2	2	µg/L	<2	10 µg/L	86.3	59	114	
EP075: Heptachlor epoxide	1024-57-3	2	µg/L	<2	10 µg/L	87.3	58	116	
EP075: alpha-Endosulfan	959-98-8	2	µg/L	<2	10 µg/L	91.3	59	116	
EP075: 4,4'-DDE	72-55-9	2	µg/L	<2	10 µg/L	85.2	61	117	
EP075: Dieldrin	60-57-1	2	µg/L	<2	10 µg/L	87.6	59	116	
EP075: Endrin	72-20-8	2	µg/L	<2	10 µg/L	88.4	56	117	
EP075: beta-Endosulfan	33213-65-9	2	µg/L	<2	10 µg/L	86.8	59	115	
EP075: 4,4'-DDD	72-54-8	2	µg/L	<2	10 µg/L	83.8	61	117	
EP075: Endosulfan sulfate	1031-07-8	2	µg/L	<2	10 µg/L	87.1	55	120	
EP075: 4,4'-DDT	50-29-3	4	µg/L	<4	10 µg/L	85.8	46	123	
EP075J: Organophosphorus Pesticides (QCLot: 2058620)									
EP075: Dichlorvos	62-73-7	2	µg/L	<2	10 µg/L	88.5	56	111	
EP075: Dimethoate	60-51-5	2	µg/L	<2	10 µg/L	70.9	44	105	
EP075: Diazinon	333-41-5	2	µg/L	<2	10 µg/L	89.5	62	114	
EP075: Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	10 µg/L	84.2	58	115	
EP075: Malathion	121-75-5	2	µg/L	<2	10 µg/L	91.2	59	120	
EP075: Fenthion	55-38-9	2	µg/L	<2	10 µg/L	86.2	60	116	
EP075: Chlorpyrifos	2921-88-2	2	µg/L	<2	10 µg/L	86.6	61	115	
EP075: Pirimphos-ethyl	23505-41-1	2	µg/L	<2	10 µg/L	88.3	61	116	
EP075: Chlorfenvinphos	470-90-6	2	µg/L	<2	10 µg/L	86.1	54	119	
EP075: Prothiofos	34643-46-4	2	µg/L	<2	10 µg/L	85.7	60	116	
EP075: Ethion	563-12-2	2	µg/L	<2	10 µg/L	85.7	59	118	

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: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 2059790)								
EM1818991-001	QA2	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.9	85	131	
		EG020A-F: Beryllium	7440-41-7	0.2 mg/L	91.0	73	141	



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2059790) - continued							
EM1818991-001	QA2	EG020A-F: Cadmium	7440-43-9	0.05 mg/L	94.2	81	133
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	89.7	78	132
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	84.9	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	89.8	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	91.9	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	93.8	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 2059788)							
EM1818944-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	# 50.1	70	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2058802)							
EM1818819-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2058807)							
EM1818761-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	92.6	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2058803)							
EM1818830-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	94.0	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2060215)							
EM1818879-002	Anonymous	EP074: Benzene	71-43-2	20 µg/L	93.4	60	128
		EP074: Toluene	108-88-3	20 µg/L	85.8	64	132
EP074E: Halogenated Aliphatic Compounds (QCLot: 2060215)							
EM1818879-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	92.3	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	81.4	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 2060215)							
EM1818879-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	96.4	68	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1818991	Page	: 1 of 6
Client	: SENVERSA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: SAM O'CONNOR	Telephone	: +6138549 9644
Project	: M17003	Date Samples Received	: 26-Nov-2018
Site	: ----	Issue Date	: 29-Nov-2018
Sampler	: SAM O'CONNOR	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1818944--002	Anonymous	Mercury	7439-97-6	50.1 %	70-120%	Recovery less than lower data quality objective
EK055G: Ammonia as N by Discrete Analyser	EM1818819--001	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK055G: Ammonia as N by Discrete Analyser						
Clear Plastic Bottle - Natural QA2	----	----	----	27-Nov-2018	23-Nov-2018	4
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural QA2	----	----	----	27-Nov-2018	24-Nov-2018	3
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser						
Clear Plastic Bottle - Natural QA2	----	----	----	27-Nov-2018	24-Nov-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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



Matrix: **WATER**

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
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) QA2	22-Nov-2018	----	----	----	27-Nov-2018	29-Nov-2018	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QA2	22-Nov-2018	----	----	----	27-Nov-2018	21-May-2019	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QA2	22-Nov-2018	----	----	----	27-Nov-2018	20-Dec-2018	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK055G) QA2	22-Nov-2018	----	----	----	27-Nov-2018	23-Nov-2018	*
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) QA2	22-Nov-2018	----	----	----	27-Nov-2018	24-Nov-2018	*
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Natural (EK059G) QA2	22-Nov-2018	----	----	----	27-Nov-2018	24-Nov-2018	*
EP074A: Monocyclic Aromatic Hydrocarbons							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074B: Oxygenated Compounds							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074C: Sulfonated Compounds							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074D: Fumigants							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074E: Halogenated Aliphatic Compounds							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074F: Halogenated Aromatic Compounds							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓
EP074G: Trihalomethanes							
Clear glass VOC vial - HCl (EP074) QA2	22-Nov-2018	27-Nov-2018	06-Dec-2018	✓	27-Nov-2018	06-Dec-2018	✓



Matrix: **WATER** 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
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075) QA2	22-Nov-2018	27-Nov-2018	29-Nov-2018	✓	28-Nov-2018	06-Jan-2019	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	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
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ 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)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1818997

Client	: SENVERSA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: SAM O'CONNOR	Contact	: Larissa Burns
Address	: Level 6, 15 William St Melbourne VICTORIA, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: sam.oconnor@senversa.com.au	E-mail	: Larissa.burns@alsglobal.com
Telephone	: ----	Telephone	: +6138549 9644
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: M17003	Page	: 1 of 2
Order number	:	Quote number	: EM2017SENV0009 (EN/333 (secondary work only))
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SAM O'CONNOR		

Dates

Date Samples Received	: 26-Nov-2018 08:20	Issue Date	: 26-Nov-2018
Client Requested Due Date	: 03-Dec-2018	Scheduled Reporting Date	: 29-Nov-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample(s) received in non-ALS container(s).**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - P-16/1 + Total Cr IWRG 621 METALS (including Total Chromium)	SOIL - TPH only TRH (C6 - C40)
EM1818997-001	23-Nov-2018 00:00	QA2	✓	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

SAM O'CONNOR

- | | | |
|--|-------|-----------------------------|
| - *AU Certificate of Analysis - NATA (COA) | Email | sam.oconnor@senversa.com.au |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | sam.oconnor@senversa.com.au |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | sam.oconnor@senversa.com.au |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | sam.oconnor@senversa.com.au |
| - A4 - AU Tax Invoice (INV) | Email | sam.oconnor@senversa.com.au |
| - Chain of Custody (CoC) (COC) | Email | sam.oconnor@senversa.com.au |
| - EDI Format - ENMRG (ENMRG) | Email | sam.oconnor@senversa.com.au |
| - EDI Format - ESDAT (ESDAT) | Email | sam.oconnor@senversa.com.au |

SUPPLIER ACCOUNTS

- | | | |
|-----------------------------|-------|----------------------------------|
| - A4 - AU Tax Invoice (INV) | Email | supplieraccounts@senversa.com.au |
|-----------------------------|-------|----------------------------------|

CERTIFICATE OF ANALYSIS

Work Order : **EM1818997**
Client : **SENVERSA PTY LTD**
Contact : SAM O'CONNOR
Address : Level 6, 15 William St
 Melbourne VICTORIA, AUSTRALIA 3000

Telephone : ----
Project : M17003
Order number :
C-O-C number : ----
Sampler : SAM O'CONNOR
Site : ----
Quote number : EN/333 (secondary work only)
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 6
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +6138549 9644
Date Samples Received : 26-Nov-2018 08:20
Date Analysis Commenced : 26-Nov-2018
Issue Date : 29-Nov-2018 18:52



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			QA2	----	----	----	----
Client sampling date / time		23-Nov-2018 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1818997-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA055: Moisture Content									
Moisture Content	----	1.0	%	5.5	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	10	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	27	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	3	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	81	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA2	----	----	----	----
Client sampling date / time				23-Nov-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1818997-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	100	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	103	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	87.2	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	108	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	103	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA2	---	---	---	---
Client sampling date / time				23-Nov-2018 00:00	---	---	---	---	---
Compound	CAS Number	LOR	Unit	EM1818997-001	-----	-----	-----	-----	-----
				Result	---	---	---	---	---
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%	102	---	---	---	---	---
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	78.0	---	---	---	---	---
Toluene-D8	2037-26-5	0.2	%	79.6	---	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.2	%	86.6	---	---	---	---	---



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

QUALITY CONTROL REPORT

Work Order	: EM1818997	Page	: 1 of 7
Client	: SENVERSA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: SAM O'CONNOR	Contact	: Larissa Burns
Address	: Level 6, 15 William St Melbourne VICTORIA, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9644
Project	: M17003	Date Samples Received	: 26-Nov-2018
Order number	:	Date Analysis Commenced	: 26-Nov-2018
C-O-C number	: ----	Issue Date	: 29-Nov-2018
Sampler	: SAM O'CONNOR		
Site	: ----		
Quote number	: EN/333 (secondary work only)		
No. of samples received	: 1		
No. of samples analysed	: 1		



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

This Quality Control Report contains the following information:

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2058973)									
EM1818993-060	Anonymous	EA055: Moisture Content	----	0.1	%	14.4	15.4	6.71	0% - 50%
EM1818993-070	Anonymous	EA055: Moisture Content	----	0.1	%	17.3	17.5	1.16	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 2058856)									
EM1818950-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	16	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	7	17.2	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	58	77	27.0	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	8	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	19	18	0.00	No Limit		
EM1818993-073	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	33	36	11.0	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	25	20.6	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	9	43.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	19	19.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	69	82	16.4	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	205	206	0.00	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 (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2058857)									
EM1818993-073	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2058814)									
EM1818934-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2058327)									
EM1818753-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1818993-060	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2058815)									
EM1818934-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2058327)									
EM1818753-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1818993-060	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2058815)									
EM1818934-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 2058327)									
EM1818753-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Page : 4 of 7
 Work Order : EM1818997
 Client : SENVERSA PTY LTD
 Project : M17003



Sub-Matrix: **SOIL**

				<i>Laboratory Duplicate (DUP) Report</i>					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EP080: BTEXN (QC Lot: 2058327) - continued									
EM1818753-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1818993-060	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit		



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 2058856)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.6	78	107	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.7	76	108	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.1	78	110	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.4	78	108	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	98.1	78	106	
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.5	78	114	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.1	80	109	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.4	92	110	
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108	
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	92.6	78	117	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.4	79	110	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2058857)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.3	77	104	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2058814)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	110	75	131	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	102	70	132	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	104	80	128	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	102	70	128	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	105	80	128	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	107	72	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	103	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	105	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	98.4	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	108	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	104	71	124	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	115	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	100	70	125	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	96.9	71	128	
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	99.7	72	126	
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	97.0	68	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2058327)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	108	61	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2058815)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2058815) - continued									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	103	72	122	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	108	84	123	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	98.1	79	119	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2058327)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	104	60	125	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2058815)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	104	77	121	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	104	83	121	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	98.0	65	123	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN (QCLot: 2058327)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	89.2	63	119	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	103	67	126	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	101	66	124	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	112	68	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	108	73	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	87.8	61	123	

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 2058856)								
EM1818993-074	Anonymous	EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	74	128	
EM1818993-074	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.1	78	124	
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.1	84	116	
		EG005T: Chromium	7440-47-3	50 mg/kg	94.8	79	121	
		EG005T: Copper	7440-50-8	50 mg/kg	99.8	82	124	
		EG005T: Lead	7439-92-1	50 mg/kg	103	76	124	
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.6	79	117	
		EG005T: Nickel	7440-02-0	50 mg/kg	105	78	120	
		EG005T: Selenium	7782-49-2	50 mg/kg	95.0	71	125	



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
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2058857)							
EM1818993-074	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	97.9	76	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2058814)							
EM1818934-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	102	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	105	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2058327)							
EM1818759-006	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	98.8	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2058815)							
EM1818934-003	Anonymous	EP071: C10 - C14 Fraction	----	806 mg/kg	106	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	110	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	99.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2058327)							
EM1818759-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	95.6	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2058815)							
EM1818934-003	Anonymous	EP071: >C10 - C16 Fraction	----	1160 mg/kg	106	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	106	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	101	44	126
EP080: BTEXN (QCLot: 2058327)							
EM1818759-006	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	103	50	136
		EP080: Toluene	108-88-3	2 mg/kg	111	56	139

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1818997	Page	: 1 of 5
Client	: SENVERSA PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: SAM O'CONNOR	Telephone	: +6138549 9644
Project	: M17003	Date Samples Received	: 26-Nov-2018
Site	: ----	Issue Date	: 29-Nov-2018
Sampler	: SAM O'CONNOR	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1818993--074	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055) QA2	23-Nov-2018	----	----	----	27-Nov-2018	07-Dec-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) QA2	23-Nov-2018	27-Nov-2018	22-May-2019	✓	28-Nov-2018	22-May-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) QA2	23-Nov-2018	27-Nov-2018	21-Dec-2018	✓	29-Nov-2018	21-Dec-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) QA2	23-Nov-2018	27-Nov-2018	07-Dec-2018	✓	27-Nov-2018	06-Jan-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) QA2	23-Nov-2018	26-Nov-2018	07-Dec-2018	✓	27-Nov-2018	07-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP071) QA2	23-Nov-2018	27-Nov-2018	07-Dec-2018	✓	28-Nov-2018	06-Jan-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) QA2	23-Nov-2018	26-Nov-2018	07-Dec-2018	✓	27-Nov-2018	07-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP071) QA2	23-Nov-2018	27-Nov-2018	07-Dec-2018	✓	28-Nov-2018	06-Jan-2019	✓

Page : 3 of 5
 Work Order : EM1818997
 Client : SENVERSA PTY LTD
 Project : M17003



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) QA2	23-Nov-2018	26-Nov-2018	07-Dec-2018	✓	27-Nov-2018	07-Dec-2018	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
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 (SnCl ₂) (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 SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



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