



**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

PROPOSED LIGHTHORSE INTERCHANGE BUSINESS PARK – CONTAMINATION ASSESSMENT WESTERN SYDNEY PARKLANDS TRUST

24 MAY 2019
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VERSION 3



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Western Sydney Parklands Trust
PO Box 3064
Parramatta NSW 2124

Attention: **Luke Wilson**
Development Manager

**Proposed Lighthorse Interchange Business Hub Contamination assessment –
Junction of M4 and M7 Motorways, Eastern Creek NSW**

Environmental Earth Sciences NSW has prepared this baseline contamination assessment report for Western Sydney Parklands Trust to ascertain the contamination status of soil and surface water resulting from historical uses at the abovementioned site to support a State Significant Development Application.

Components of preliminary assessment with complimentary detailed assessment were undertaken in areas proposed for redevelopment for commercial land use. Findings have been used to develop recommendations for additional assessment and provide management options management of identified impact.

Should you have any queries, please do not hesitate to contact us on (02) 9922 1777.

For and on behalf of
Environmental Earth Sciences NSW

Project Manager
Lachlan Desailly
Environmental Scientist

Project Director / Internal Reviewer
Chris Newland
Principal

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EXECUTIVE SUMMARY

Introduction and objectives

Environmental Earth Sciences NSW was commissioned by Western Sydney Parklands Trust (WSPT) to undertake a targeted contamination investigation at the proposed Lighthorse Business Interchange Hub site, located at the junction of No.4 (M4) and No.7 (M7) motorways, and along Ferrers Road (adjacent to M4 Motorway), Eastern Creek NSW (the “site”).

In-line with the Planning Secretary’s Environmental Assessment Requirements (SEARs) for the site (application number SSD 9667), the objective was to undertake detailed contamination investigation which would inform preparation of an environmental impact statement (EIS) for the site to a standard suitable for inclusion in the State Significant Development Application. The specific objectives were:

- Assess the potential for site contamination through the identification of potential contamination sources and potential contaminants of concern.
- Undertake a limited intrusive soil assessment to ascertain general soil contamination conditions of fill materials and consequent risk profile.
- Provide recommendations for any additional DSI to further delineate suspected soil and/or groundwater contamination to ascertain if any unacceptable risk exists for future users of the site and the environment.

The WSPT plan to redevelop the site into a new commercial warehouse precinct and require contamination profiling to assist their planning and design. As such this targeted assessment has been undertaken for environmental due diligence purposes and will aim to inform potential costs for more detailed environmental assessment and/or remediation to aid the proposed development.

Findings

Western portion

As part of the initial stage of this investigation, Environmental Earth Sciences reviewed the Preliminary Site Investigation (PSI) Report (Zoic 2017) and prepared a sampling plan for due diligence purpose. The PSI indicated five different settings as areas of potential environmental concern – former army compound, former army camp, wastewater treatment plant (WWTP), general soil disturbance (potential buried waste among the site), and surface waters. In the scope of this study, the contamination status of these five settings were investigated through intrusive works, visual assessment and chemical analyses.

Main findings of this investigation can be summarised as follows:

- All analysed samples were below the health investigation/ health screening criteria for a commercial/ industrial land use scenario (HIL-D and HSL-D).
- Hydrocarbon leak was detected from the two underground storage tanks (USTs) located at the former army compound.
- The horizontal extent of the impact was observed to be constrained by the high plasticity clay soils surrounding the UST and appeared to be limited with the sand bedding of the USTs.
- The vertical extent of the impact may require further investigation, this can be done after the removal of the USTs.
- As there were no indications of the site ever being involved in bulk storage and/or use of aqueous firefighting foams (AFFF), investigation for per- and poly-fluoroalkyl substances (PFAS) chemicals was not undertaken.
- A preliminary review for potential unexploded ordinance (UXO) risk was undertaken with findings reporting no known risk for the site.

Bonded asbestos containing material (ACM) was detected at the buildings of the former army compound. Bonded asbestos fragments were also observed on the topsoil around the bonded ACM impacted buildings.

Water was observed in four of the tanks of the wastewater treatment plant (WWTP), grit chamber, two primary sedimentation tanks and a distribution chamber. Initial water quality assessment conducted at these tanks indicated that the water contained in these tanks may not require treatment; however, this should be confirmed by assessment of potential settled solids in the bottom of the WWTP tanks.

Soil mounds and piles found among the site were subject to visual assessment and soil testing at various locations.

- Exceedances of relevant environmental criteria were noted at some locations; however, all results were well below the relevant health criteria.
- Bonded ACM was noted in fill material at four locations.

Eastern portion

All soil results were reported below adopted interim human health criteria for commercial / industrial land use (ASC NEPM, 2013) or below laboratory detection at all targeted and coverage locations tested. Risk posed by contamination was generally confined to fill materials within stockpiles, for which the source / origin could not be determined. In total there were seven main stockpiles encountered, all within the proposed eastern offset storage area and the proposed new access road portions. Key findings included:

- Two portions of low-lying controlled filling were noted within the eastern offset area to the north and west of Stockpile 1. This material appeared to be reworked natural material with inspection noting no visible / olfactory indications of contamination and associated negligible risk.

- Coverage assessment undertaken on the surface / near-surface at east / west offset storage areas and the proposed access road there were no visible / olfactory indications of contamination. Results of composite laboratory sampling confirmed observations of negligible contamination and associated low risk.
- The targeted assessment of the Ferrers Road (western verge) was did not note any visible / olfactory indications of contamination. Results of composite laboratory sampling confirmed observations of negligible contamination and associated low risk.
- As there were no indications of the site ever being involved in bulk storage and/or use of aqueous firefighting foams (AFFF), investigation for per- and poly-fluoroalkyl substances (PFAS) chemicals was not undertaken.
- A preliminary review for potential unexploded ordinance (UXO) risk was undertaken with findings reporting no known risk for the site.
- The targeted assessment of the Ferrers Road (western verge) was did not note any visible / olfactory indications of contamination. Results of composite laboratory sampling confirmed observations of negligible contamination and associated low risk.
- Several stockpiles of uncontrolled poor-quality fill were assessed (Stockpiles 2 – 7) in the proposed access road and eastern offset portions. Chemical results for Stockpiles 2 – 5 (respective sample locations SBH2 – SBH5) reported elevated PAH concentrations in excess of the ESL for benzo(a)pyrene; and lead and benzo(a)pyrene in excess of GSW thresholds in the Waste Guidelines. Bonded asbestos was encountered within material in Stockpile 1 at two separate locations. A small mound of material which appeared to have been illegally tipped on the western verge of Ferrers Road tested negative for asbestos however this material should be treated with suspicion and further assessed prior to a decision on management being made.
- Assessment of fill material within the levee walls of both farm dams did not report any visible / olfactory indications of contamination, which was backed up by the laboratory results that reported all contaminants of potential concern either below laboratory detection and/or adopted criteria.
- Assessment of surface water in Farm Dam No.1 reported elevated detections for biological parameters (*e.coli*, faecal coliforms and bacterial plate count), with zinc exceeding the ANZECC/ARMCANZ (2000) freshwater quality criteria for protection of 95% species.

Conclusion and recommendations

Western portion

Environmental Earth Sciences provides the following recommendations for the management of the identified contamination on site:

- Former Army Compound USTs:

- Ex-situ decommissioning of two identified USTs and removal of impacted material (sand and purge water) are recommended to be undertaken.
- Asbestos at Former Army Compound Buildings:
 - Prior to the decommissioning of these buildings an asbestos removal specialist should be engaged and all ACM should be removed from the structures to be decommissioned.
 - For the surface soil impacted with bonded ACM, the recommended strategy for remediation would be to remediate soil by emu picking and clearing as much visible asbestos impact as possible to enable onsite reuse of soils.
- WWTP:
 - The results indicated that the water stored at the WWTP may not require treatment before discharge. However, the data gap associated with the settled solids at the bottom of these tanks should be eliminated by additional sampling before any discharge is made.
 - Disturbance of the settled solids at the bottom of the tanks can cause mixing of contaminants into the standing water; this should be avoided as much as practicable.
 - Before making any discharge to any receiving point, discharge permits should be taken from the relevant authorities (EPA for discharge to the environment and Sydney Water for discharge into the sewer).
- Soil Mounds and Piles Among the Site:
 - For the localised fill materials impacted with bonded ACM, the recommended strategy for remediation would be to remediate soil by emu picking and clearing as much visible asbestos impact as possible so soil can be reused onsite.
 - Additional sampling of one pile of soil, which had a sample exceeding the environmental criteria for benzo(a)pyrene, is recommended.

Eastern portion

Based upon findings of this assessment the following recommendations for additional assessment have been identified to refine the conceptual site model:

- Conduct further asbestos assessment of the tipped pile of rubble on the western verge of Ferrers Road.
- Conduct assessment on the chemical quality of the sediments at the bottom of each farm dam.
- Conduct additional leachate analyses for soil in stockpiles SBH2 – SBH5 to potentially revise-down the provisional waste classification should offsite management of these materials be opted.

It is also recommended to prepare a Construction Environmental Management Plan (CEMP) that will document procedures for onsite / offsite management of reported contamination and asbestos along with general environmental controls. The CEMP will also document procedures for general environmental controls to be implemented during construction activities that will mitigate potential human health risk and environment harm.

Based upon the results and findings of the assessment, Environmental Earth Sciences considers that the site is suitable for the proposed commercial development pending that the management recommendations are followed.

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1 INTRODUCTION

Environmental Earth Sciences NSW was commissioned by Western Sydney Parklands Trust (“The Trust”) to undertake a contamination assessment for the proposed Lighthouse Business Hub property, at the junction of No.4 (M4) and No.7 (M7) motorways, and along Ferrers Road (adjacent to M4 Motorway), Eastern Creek NSW (the “site”).

It is understood the WSPT plan to redevelop the site into a new commercial warehouse precinct and require contamination profiling to assist their planning and design. This report has been prepared to document findings of this targeted assessment in the context of environmental due diligence to aid planning prior to development.

The western portion of site is formally identified as Lot 10 Deposited Plan (DP) 1061237 and the eastern portion forms part of existing Lot 5 DP 804051. Refer to **Figure 1A** and **Figure 1B** respectively for site location and **Figure 2A** and **Figure 2B** for respective investigation boundaries of the western and eastern portions.

This report should be read in conjunction with the limitations and appendices contained within the proposals (ref: PO117164_V3, 23 October 2017 [western portion] and ref: PO118089_V2, 4 June 2018 [eastern portion]) and the limitations detailed in Section 11 of this report.

2 OBJECTIVES

Undertake preliminary and detailed contamination investigations at the site to develop the initial conceptual site model (CSM) of contamination to a standard suitable for inclusion in an environmental impact statement (EIS) as part of State Significant Development – Planning Secretary’s Environmental Assessment Requirements (SEARs) (SSD9667). The specific objectives were:

- Assess the potential for site contamination through the identification of potential contamination sources and potential contaminants of concern.
- Undertake a limited intrusive soil assessment to ascertain general soil contamination conditions of fill materials and consequent risk profile.
- Provide recommendations for any additional DSI to further delineate suspected soil and/or groundwater contamination to ascertain if any unacceptable risk exists for future users of the site and the environment.

3 WORKS UNDERTAKEN

3.1 Preliminary works

- A detailed review of Zoic (2017) preliminary contamination assessment report.

- Council planning certificate under Section 10.7 [2] & [5] of the Environmental Planning and Assessment Act 1979 (EP&A Act).
- Available soil, geology and hydrogeology maps.
- Historical aerial photography.
- Review of unexploded ordinance (UXO) investigation (JBS&G, 2018).
- SafeWork NSW records for the possible storage and use of licensed dangerous goods.
- NSW EPA records under the Contaminated Land Management Act 1997 (CLM Act) to ascertain if there are any current or historical investigation / remediation orders for the site or surrounding areas.
- Preparation of Work Health and Safety (WH&S) documentation, including a safe work method statement (SWMS) to mitigate against known hazards during investigation works.
- Review of unexploded ordinance (UXO) investigation (JBS&G, 2018).

3.1.1 Work health and safety

Work Health and Safety (WH&S) documentation prepared included a safe work method statement (SWMS) to mitigate against known hazards during intrusive investigation works.

3.1.2 Utility location

Environmental Earth Sciences undertook a requisite dial-before-you-dig (DBYD) search of known utilities running onto / near the site. A qualified utility search subcontractor was then employed to physically scan for known / suspected services and make assessment locations safe to excavate.

3.2 Intrusive investigation

The investigation program was undertaken with reference to the following guidelines endorsed by the NSW EPA:

- Heads of EPAs Australian and New Zealand (2018) – *PFAS National Environmental Management Plan* (HEPA, 2018).
- National Environment Protection Council (NEPC) – *National Environmental Protections (Assessment of Site Contamination) Amendment Measure No.1 2013* (ASC NEPM, 2013).
- NSW Environment Protection Authority (EPA) (1995) - *Contaminated Sites: Sampling design guidelines*.
- NSW EPA (2016) - *Designing Sampling Programs for Sites Potentially Contaminated by PFAS* – Guidance Document.

- Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia (ARMCANZ) (2000) – *Australian and New Zealand guidelines for fresh and marine water quality.*

3.2.1 Assessment and sampling

Intrusive works for assessment of soils were undertaken using a combination of:

- Mechanical methods (5-tonne excavator); and
- Manual methods (hand auger / shovel)

The investigation was undertaken for both coverage and targeted purposes at locations summarised in **Table 1**.

Table 1: Intrusive Investigations

Investigation Area	Approximate size	Investigation works	Assessment locations
PAEC-1 - Former Army compound & transmission area (Figure 3A)	----	Test pitting – 8 x discrete locations	DP1, TP1 – TP6, TP12
PAEC-2 - Former army camp (Figure 2A)	----	Manual – 2 x surface soil sampling locations Test pitting – 4 x discrete locations	SS5 and SS6 TP17 – TP20
PAEC-3 - WWTP including effluent discharge area (Figure 4A)	----	Manual – 3 x surface soil sampling locations 2 x water Test pitting – 2 x discrete locations	SS1, SS2 and SS4 TP13 and TP14
PAEC-4 - General disturbance areas (Figure 5A and 6A)	----	Test pitting – 12 x discrete locations 1 x stockpile testing location	TP7 – TP11, TP15, TP16, TP21 – TP25 SS3
PAEC-5 – Eastern Creek	----	Visual – Observations of water quality	----
Flood compensation storage offset area east of Eastern Creek	6 ha	Manual – 6 x composite surface soil assessment locations (each incorporating 4 sub-samples from each location). Test pitting – 4 x discrete locations into possible stockpiles.	COMP-1 - COMP-6 STP1 – STP4
Flood compensation storage offset area west of Eastern Creek	3 ha	Manual – 3 x composite surface soil assessment locations (each incorporating 4 sub-samples from each location).	COMP-7 - COMP-9 SBH1
Proposed corridor of new access road	2.5 ha	Manual – 7 x discrete surface soil assessment locations. 7 x stockpile samples	BH1 – BH7 (coverage) SBH2 – SBH7 (stockpile2)

Investigation Area	Approximate size	Investigation works	Assessment locations
Proposed area of redevelopment of Ferrer's Road	2.5 ha	Test pitting – 6 x discrete locations along road corridor.	TP1 – TP6 (coverage)
Farm dam No.1	----	Test pitting – 2 x discrete locations into levee walls. Manual – 1 x water sample.	DTP3 – DTP4 (soil) DAM-1 (water)
Farm dam No.2	----	Test pitting – 2 x discrete locations into levee walls. Manual – 1 x water sample.	DTP1 – DTP2 (soil) DAM-2 (water)

Soil

Soil assessment and sampling was undertaken by a qualified scientist from Environmental Earth Sciences. Descriptions of soil materials and fill type were recorded on borelogs for the western and eastern portions of site (**Appendix A1** and **Appendix A2** respectively), noting any visible contamination or malicious odours. Field soil headspace screening was undertaken using a calibrated photo-ionisation detector (PID) meter at each soil sample location for the collection of semi-quantitative information on potential impact with VOCs. The calibration certificate of the PID is presented in **Appendix B**.

Representative samples were collected from both fill material and natural soil horizons, with composite sampling being undertaken for coverage purposes, and discrete sampling being undertaken to target areas of suspected impact (such as stockpiles).

Samples were collected by hand using disposable nitrile gloves, with soil placed directly into a clean glass jar supplied by the nominated NATA accredited laboratory. Samples were placed immediately into a chilled (i.e. <4°C) container for transport to the laboratory under full chain-of-custody documentation.

During the test pitting representative soil samples were collected directly from the centre of the bucket of the excavator upon a fresh surface. During the hand auguring, soil samples were collected out of the chamber of the auger. Intra-laboratory field duplicate samples were collected for quality assurance/ quality control (QA/QC) purposes.

Where asbestos was suspected, samples were collected of potential asbestos containing materials (PACM) or potential friable asbestos.

Surface water

In addition to that, two water samples were collected from the WWTP (PAEC-3) and one water sample was collected from the stagnant water accumulated in the sand bedding of the USTs (PAEC-1).

Surface water samples of the two farm dams on the eastern portion of site were obtained using grab sampling techniques. This was undertaken safely using a container tethered to the end of a rope.

Visual

Assessment of surface water quality was undertaken in Eastern Creek (PAEC-5), which receives flow from both Reedy Creek and Eskdale Creek running through the centre of site.

In areas not targeted for intrusive assessment (e.g. scrub in the southern portion of the site), a general visual assessment was undertaken to confirm that there were no other signs of contamination, historical contaminating use or other former land use.

3.3 Laboratory analysis

3.3.1 Soil

Soil samples were tested for a subset of the following chemicals of potential concern and hazardous materials:

- Heavy metals (As, Cd, Cu, Cr_{TOTAL}, Pb, Hg, Ni, Zn).
- Total Recoverable Hydrocarbons (TRH) (Fractions C₆ – C₄₀).
- Benzene, Toluene, Ethylbenzene, Total xylenes (BTEXN).
- Polycyclic Aromatic Hydrocarbons (PAH).
- Organochlorine (OCP) / Organophosphorus pesticides (OPP) on the eastern portion of site only.
- Laboratory analyses were undertaken for presence / absence of bonded asbestos in ACM and asbestos fines (AF) in soil.
- Microbiological parameters (only undertaken in the western portion of site near the WWMF):
 - Faecal coliform.
 - Streptococci.
 - Total coliforms.
 - Bacteria (plate count).
 - *E.coli*.
 - Salmonella.

As there were no indications from historical information that the site was ever used for bulk storage and/or use of AFFFs, investigation for PFAS chemicals was not undertaken.

3.3.2 Water

Samples collected as part of the project were submitted for analyses of the following chemicals of concern:

- TRH (C₆-C₄₀).
- BTEX.
- PAH (eastern portion only).
- Dissolved heavy metals (As, Cd, Cu, Cr_{TOTAL}, Pb, Hg, Ni, Zn).
- Major anions and cations (western portion only).
- Nitrate / nitrite (western portion only).
- Microbiological parameters:
 - Faecal coliform.
 - Streptococci.
 - Total coliforms.
 - Bacteria (plate count).
 - E.coli.
 - Salmonella.

As there were no indications from historical information that the site was ever used for bulk storage and/or use of AFFFs, investigation for PFAS chemicals was not undertaken. All samples were submitted to laboratories that are NATA accredited for the requested analyses.

4 SITE IDENTIFICATION AND SETTING

4.1 Location and property description

Site identification details are provided in **Table 2**.

Table 2: Site identification

Item	Details	
	Western portion	Eastern portion
Owner	Western Sydney Parklands Trust	
Addresses	Corner of M4 and M7 Motorways, Eastern Creek, NSW	Ferrers Road (near Brabham Drive), Eastern Creek, NSW
Area	~72 hectares (ha)	~20 hectares (ha)
Current zoning	State Environmental Planning Policy (Western Sydney Parklands) 2009	
Proposed land use	Commercial/ Industrial	
Local Government Authority	Blacktown Council	
Site Location and Layout	Figure 1A (Site Location) and Figure 2A (Site Features)	Figure 1B (Site Location) and Figure 2B (Site Features)

4.2 Site layout and activities

4.2.1 Western portion

The site covers approximately 72 ha area which included a former army compound, a former WWTP and a former army camp (**Figure 2A**). During the time of this investigation, the site was being used for cattle grazing purposes and was covered with vegetation (predominantly grassland).

Intrusive works and visual assessment / full site walkover was conducted by Environmental Earth Sciences on 22-23 November 2017. Photographs taken during these works are presented in **Appendix C1**. The key site features are presented in **Table 3** **Table 4**: .

Table 3: Key site features

Key Site Features	Relevant Figures	Relevant Photos (Appendix C1)
Two underground storage tanks (USTs) identified at the former army compound	Figure 3A	Photo 1-3
Three abandoned buildings (Building 1, 2, and 3) located within the former army compound	Figure 3A	Photo 5 – 8
A WWTP containing the following disused infrastructure: • Grit chamber • Two primary sedimentation tanks • One distribution pit • Two aerobic treatment tanks, and • Two separate sand filters.	Figure 4A	Photo 9-12
Miscellaneous soil mounds and stockpiles throughout the site	Figure 5A and 6A	Photo 13-16
Former army camp footprint located in the central western portion of the site	Figure 2A	----
A former incinerator identified near the former army camp footprint	Figure 2A	Photo 17
Piles of rubble	Figure 5A and 6A	Photo 18
Reedy Creek and another unnamed channel combining to form the Eastern Creek at the eastern portion of the site	Figure 2A	Photo 19
A high-pressure gas main	Figure 2A	Photo 20

4.2.2 Eastern portion

Site inspection and intrusive investigation was undertaken by Environmental Earth Sciences between 29 June 2018 and 2 July 2018. The site comprised the following general areas:

- Open area adjacent to Ferrers Road corridor.
- Open area south of M4 motorway corridor.
- Eastern Creek riparian zone.

The inspection noted that the majority of the open areas onsite were being used for agricultural purposes (livestock grazing) and were covered with vegetation (predominantly grassland). The riparian corridor of Eastern Creek was heavily vegetated, comprising mature trees and shrubs.

No current or historical contaminating uses were identified during the inspection, or areas of gross contamination witnessed on the ground surface. Filling was noted on the verges of Ferrers Road and within miscellaneous stockpiles placed between Ferrers Road and the Eastern Creek riparian corridor. Key features of the site are noted in **Table 4**, along with corresponding figure and photographic references.

Table 4: Key site features

Key Site Features	Relevant Figures	Relevant Photos (Appendix C2)
Two farm dams on the eastern side of Eastern Creek	Figure 2B	Plates 1 - 8
Miscellaneous stockpiles throughout the site	Figures 3B, 5B	Plates 9 - 15
Road shoulder of Ferrers Road	Figure 6B	Plates 16 - 21
Proposed path of access road	Figure 5B	----
Flood compensation offset area East	Figure 3B	----
Flood Compensation offset area West	Figure 4B	----

4.3 Surrounding land uses

The following adjacent land uses were observed at the time of the site inspection:

- North – Vehicular thoroughfare of M4 motorway immediately adjacent. Rural residential and commercial / industrial land uses beyond. Eastern Creek continues downstream to the north of site.
- South – Eastern Creek Waste Management Centre immediately to the south. Newly developed commercial properties beyond. A brick pit is located offsite to the south. Upstream reaches of Eastern Creek situated south of site.
- East – The vehicular thoroughfare of Ferrers Road and Sydney Motor Sport Park Raceway property. Water supply catchment of Prospect Reservoir located approximately 1.3 kilometres east of site.
- West – Vehicular thoroughfare of M7 motorway immediately adjacent, commercial / industrial properties beyond.

4.4 Physical setting

4.4.1 Topography and drainage

The site generally slopes downward towards the south west in the direction of Eastern Creek. Elevations on the site range from approximately 54 metres above Australian Height Datum (mAHD) to 42 mAHD.

Given the majority of the site is currently unsealed and covered with vegetation it is expected that a high degree of precipitation would infiltrate into the underlying soil and recharge the upper aquifer. Waterlogged soils may see runoff directly into Eastern Creek or into an engineered stormwater diversion channel running from the junction of Ferrers Road and Braham Drive to Eastern Creek, parallel to the M4 motorway corridor. There are two farm dams onsite (eastern portion) which also divert their spillways into Eastern Creek through an engineered earthen channel.

4.4.2 Hydrology

Surface water flows onsite occur in two natural channels which run generally southwest to northeast (Reedy Creek and Eskdale Creek) and also in an engineered stormwater diversion channel running from the junction of Ferrers Road and Braham Drive to Eastern Creek. Eastern Creek runs through the centre of the site and flows in a northerly direction toward the confluence of Nepean River located approximately 23 km north of site.

4.4.3 Regional geology

Based on NSW Department of Minerals and Energy (1991) - *1:100,000 Penrith Geological Series Sheet 9030*, the majority of the western portion of site is underlain by Quaternary deposits of fine-grained sand, silt and clay which are associated with the meandering alluvial channel of Eastern Creek.

The eastern portion and north-western corner of the site is underlain by Bringelly Shale of Wianamatta Group, consisting of shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, rare coal and tuff.

4.4.4 Hydrogeology

Environmental Earth Sciences undertook a review of Department of Primary Industries (DPI) Office of Water registered groundwater wells. Findings indicated there were seven registered bores within a 2 km radius of the site, with the closest registered well located approximately 1.4 km south of the site. All seven wells were registered for monitoring uses. The depth to standing water was not reported, but the wells were drilled to depths ranging between 12 – 27 metres below ground level (mBGL). Refer to **Appendix D** for a report showing information for this closest licensed bore.

With the site situated over alluvial floodplain deposits, it is likely that the uppermost aquifer has a hydrogeologic connection with Eastern Creek, and therefore the standing water level (SWL) of groundwater would be at a commensurate elevation.

Given the presence of drainage lines within the site, it is anticipated that the groundwater beneath the site is relatively shallow near the water courses and would be expected to increase with distance from the watercourses.

4.4.5 Salinity

A review of the DIPNR (2002) – *Map of Salinity Potential in Western Sydney* indicated that the site is situated in an area of moderate to high salinity potential. In general salinity is most likely to occur on lower slopes, foot-slopes and along creek lines.

5 SITE HISTORY

5.1 Western portion

The Zoic Environmental (2017) – *Draft Preliminary Site Investigation, Proposed Lighthorse Business Hub, Corner of M4 and M7 Motorways, Eastern Creek NSW* (ref: 17105; August 2017) report was made available, with this being used to gain information on land use history and ascertain potential areas of environmental concern from a contamination perspective that required further detailed assessment.

5.1.1 Land use history

Historical use of the site was comprehensively reported in Zoic (2017), with the following key feature on land use mentioned:

- Site predominately used by defence since 1943. Anecdotal information indicates that the site was part of the Wallgrove Army Base which was utilised as a staging and training area during World War II.
- The army camp operated as a wireless chain and as a migrant hostel after the end of World War II. The camp was occupied by various army units until circa 1970s, after which the Royal Australian Air Force (RAAF) took over the site.
- Based upon historical aerial photography, the army camp was operated until the 1980s. Radio transmission and antenna operated from the 1960s until the 1990s.
- No manufacturing or industrial processes are known to have been undertaken at the site, with the exception of wastewater treatment plant (WWTP) in the central portion. Site has been used for cattle grazing for at least the last 10 years.

5.1.2 Findings from Zoic (2017) report

Pertinent findings of the Zoic (2017) report investigation included:

- Entire site covers approximately 72 hectares.
- Site was used for defence purposes since circa 1943 to the 1990s. Following land uses onsite included:
 - Former Wallgrove Army Base used the site as a training facility since c.1943.
 - Signal transmission station from circa 1960s to the 1990s.
 - Staging camp for post-WWII migrants.
 - Former site infrastructure associated with the camp included the camp compound, WWTP.
 - Two underground storage tanks (USTs) were noted adjacent the transmission building which represented a potential point source of contamination.

- Areas of soil disturbance identified in construction of man-made channels, and uncontrolled fill material in the south west portion of the site.
- Recent use of the former defence portion of the site predominantly for agricultural grazing purposes (approximately over the last 10 years).
- Findings relevant to all areas of the site included:
 - Walkover identified fragments of bonded fibre-cement material (potential asbestos containing material (PACM)), and potentially lead paint identified on the ground surface near former buildings and some existing buildings.
 - Moderate to high salinity potential recognised in desktop assessment. Depth to groundwater was expected to be shallow around the watercourses and monitoring wells were observed on site.

A SafeWork NSW search of dangerous goods or review of Council planning certificate (under Section 149 (2) and (5)) was not undertaken as part of the PSI. The site was not shown to be listed on the NSW EPA's register of contaminated sites, with there being no other listed or notified sites on the register within a one-kilometre radius of site.

According to the NSW Protection of Environment Operation Act 1997 (POEO Act) public register, there were eight POEO Act licensed activities operating within a one-kilometre radius of the site:

- Roads and Maritime Services – road construction at the M4 Motorway to the north of the site.
- Waste Assets Management Corporation – Eastern Creek Waste Management Centre to the immediate south of the site.
- LMS Energy Pty Ltd – Two gas utilisation facilities to the immediate southeast of the site.
- Aluminium Specialities Group Pty Ltd – Metal waste generation facility approximately 175m southwest of the site.
- Suez Recycling & Recovery Pty Ltd – compositing facility approximately 540m south of the site.
- EDL LFG (NSW) Pty Ltd – Generation of electrical power from gas facility approximately 550m south of the site.
- Eastern Creek Operations Pty Ltd – Waste recovery, composting and nonthermal treatment of general waste facility approximately 960m south of the site.

No sites were listed as being part of the NSW EPA per- and polyfluoroalkyl substances (PFAS) investigation program within a two-kilometre radius of the site.

5.1.3 Identified areas of concern

Main areas of potential environmental concern (PAEC) identified in the Zoic (2017) report that were the focus of this assessment are summarised in **Table 5** Error! Reference source not found.. Refer to **Figure 2A** for general locations of each PAEC.

Table 5: Areas of concern (Zoic, 2017)

Area of Concern	Property	Details
PAEC1	Former army compound & transmission area	- Identified uncontrolled fill introducing potential chemical contamination and potential asbestos containing materials (PACMs). - Former transmission area antenna with potential use of grease / heavy oils, and heavy metals associated with use of copper matting. - Two underground storage tanks (USTs) adjacent to the main compound building being primary source of petroleum hydrocarbon impact to soil and/or groundwater.
PAEC2	Former army camp	- Remnant soil mounds of unknown material introducing potential chemical contamination and PACM. - Footprint of former buildings for potential uncontrolled filling and PACM. - Potential for buried waste, noted to be a common practice on military bases immediately following WWII, by introducing potential chemical contamination and PACM.
PAEC3	WWTP	- Discharge channels and effluent discharge area present location where effluent would have been released upon the ground surface introducing potential biological impact and elevated nitrogen. - Potential that biosolids from the WWTP were buried onsite as per previous practices.
PAEC4	General disturbance	Potential for buried waste as noted to be a common practice on military bases immediately following world war II
PAEC5	Surface waters	Potential impact to groundwater and surface water (two creek lines in the southern portion of site including Eastern Creek

5.2 Eastern portion

5.2.1 Historical aerial photograph review

A review of historical aerial photographs and other available imagery for the site is presented in **Table 6**. The site and surrounding area were generally cleared of natural vegetation and seemingly developed for agriculture in the earliest aerial photograph reviewed (1943).

Table 6: Review of aerial photographs

Year	Notes
1943 ¹	The entirety of the site was cleared aside from the creek / levee channel of Eastern Creek and associated riparian zone. No structures or engineered stormwater drainage features or farm dams evident onsite. Vehicular thoroughfares of M4 motorway and Ferrers Rd not yet constructed. Army barracks visible offsite to the west.
1956 ²	No significant change from previous edition.
1961 ²	Clearance of the riparian vegetation corridor on the western side of Eastern Creek evident. Vehicular track now evident running alongside the western side of Eastern Creek.
1965 ²	Farm dam No.2 now evident on site.
1970 ²	Farm dam No.1 now evident on site. A group of small structures now evident immediately north of farm dam No.1.
1977 ³	The F4 freeway (now M4 motorway) vehicular thoroughfare now evident.
1982 ²	No significant change from previous edition.
1991 ²	Minor earthworks visible in the north of site, just to the south of the freeway corridor. Possibly for construction of open drain. Ferrers Road vehicular sealed thoroughfare now evident around the western boundary of the newly constructed Eastern Creek Raceway.
2004 ⁴	No significant change from previous edition.
2009 ⁴	No significant change from previous edition.
2012 ⁴	Site as above, Ferrers Rd to M4 access road had been removed. Evidence of material stockpiling visible on eastern side of eastern creek (stockpile reaches present day extent by 2013)
2014 ⁴	No significant change from previous edition.
2017 ⁴	No significant change from previous edition.

Notes:

1. NSW Spatial Information Exchange Maps (SIX maps) satellite imagery
2. Zoic (2016) PSI (draft)
3. Blacktown City Council maps
4. Google Earth imagery

5.2.2 Council Planning Certificate

A search of the Blacktown City Council planning certificate was undertaken under Section 10.7 [2] & [5] of the EP&A Act, returning the following information pertaining to contaminated land or other associated planning restrictions for the site:

- Is **not** significantly contaminated within the meaning of that Act at the date when the certificate was issued.
- Is **not** subject to a management order within the meaning of that Act at the date when the certificate was issued.

- Is **not** the subject of an approved voluntary management proposal with the meaning of that Act when the certificate was issued.
- Is **not** the subject of an ongoing maintenance order within the meaning of that Act when the certificate was issued.
- Is **not** the subject of a site audit statement within the meaning of that Act if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Council planning certificates are presented in **Appendix D**.

5.2.3 SafeWork NSW Dangerous Goods search

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by SafeWork NSW did not locate any records pertaining to bulk storage of dangerous goods / fuels / chemicals at the site. The dangerous goods search results are presented in **Appendix D**.

5.2.4 Unexploded ordinance (UXO)

Based upon a preliminary review of potential UXO risk undertaken by JBS&G (2018) (<http://www.defence.gov.au/UXO/Where/Default.asp>), UXO was not considered to be a potential risk. Refer to Appendix I for related correspondence.

5.2.5 NSW EPA Contaminated Sites Register

A search of the NSW EPA contaminated land public record database showed no notices or records for the site. There is no record of the site ever having been included on the following list of NSW EPA notices issued in accordance with Contaminated Land Management Act 1997 (CLM Act):

- Declaration of an investigation area (under Section 15 of the CLM Act);
- Declaration of a remediation site (under Section 21 of the CLM Act);
- Investigation order (under Section 17 of the CLM Act);
- Remediation order (under Section 23 of the CLM Act);
- Voluntary investigation proposal (under Section 19 of the CLM Act);
- Voluntary remediation proposal (under Section 26 of the CLM Act); and
- Site Audit Statement (SAS) with (under Section 53B of the CLM Act).

6 ASSESSMENT CRITERIA

Site investigation criteria have been selected to provide an appropriate indication of the environmental status of the site with consideration given to the proposed commercial / industrial land uses. In accordance with current legislation, Environmental Earth Sciences refers to the ASC NEPM (2013) for site assessment criteria. Typically for contaminant concentration to be considered acceptable for the respective land use criteria, the data set must conform to the following requirements:

- the 95% upper confidence limit (UCL) of the arithmetic mean of analytical results is below the site criteria;
- the arithmetic (or geometric in cases where the data is log normally distributed) mean is below the site criteria;
- the standard deviation is less than 50% of the site criteria; and
- no single sample analytical result is greater than 250% of the site criteria.

A range of threshold guidelines will be adopted from ASC NEPM (2013) as interim remediation criteria for the assessment of acceptable concentrations of contaminants in soils and groundwater. For soil, these investigation levels are derived from toxicity of substances and estimated exposure of humans under various land use scenarios.

Other guidelines endorsed by the NSW EPA include:

- HEPA, 2018.
- NSW EPA (1995) - Contaminated Sites: Sampling design guidelines.
- NSW EPA (2016) - Designing Sampling Programs for Sites Potentially Contaminated by PFAS – Guidance Document.
- ANZECC/ ARMCANZ (2000) – Australian and New Zealand guidelines for fresh and marine water quality.

As there were no indications from historical information that the site was ever used for bulk storage and/or use of AFFFs, investigation for PFAS chemicals was not undertaken.

6.1 Soil investigation levels

6.1.1 Health investigation levels (HILs)

Appropriate health-based investigation levels (HILs) will be applied to the developed areas of site used commercial / industrial purposes. These HILs are taken from the ASC NEPM (2013) and are presented for reference in **Table 7**.

Table 7: Health investigation levels for soil contaminants

Analyte	Health-based investigation levels (mg/kg) ¹
	Commercial / industrial ² D
Metals and Inorganics	
Arsenic ³	3,000
Cadmium	900
Chromium (VI)	3,600
Copper	240,000
Lead ⁴	1,500
Mercury (inorganic)	730
Nickel	6,000
Zinc	400,000
Polycyclic Aromatic Hydrocarbons (PAHs)	
Carcinogenic PAHs (as BaP TEQ) ⁵	40
Total PAHs ⁶	4,000

Notes:

- Generic land uses are described in detail in Schedule B7 Section 3 of the NEPM 2013
- HIL D – Commercial / industrial land use scenario.
- Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability may be important and should be considered where appropriate (refer Schedule B7).
- Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.
- Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.
- Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998). The application of the total PAH HIL should consider the presence of carcinogenic PAHs and naphthalene (the most volatile PAH). Carcinogenic PAHs reported in the total PAHs should meet the B(a)P TEQ HIL. Naphthalene reported in the total PAHs should meet the relevant HSL.

PAH species	TEF	PAH species	TEF
Benzo(a)anthracene	0.1	Benzo(g,h,i)perylene	0.01
Benzo(a)pyrene	1	Chrysene	0.01
Benzo(b+j)fluoranthene	0.1	Dibenz(a,h)anthracene	1
Benzo(k)fluoranthene	0.1	Indeno(1,2,3-c,d)pyrene	0.1

6.1.2 Ecological investigation levels (EILs)

The ecological investigation levels (EILs) assigned by the ASC NEPC (2013) *Schedule B5a - Guideline on Ecological Risk Assessment* are adopted for this assessment. This guideline presents the methodology for deriving terrestrial EILs using both fresh and aged (i.e. > 2 years old) contamination for soil with in a commercial/ industrial land use scenario.

The methodology has been developed to protect soil processes, soil biota (flora and fauna) and terrestrial invertebrates and vertebrates. The approved land use on the site is commercial / industrial and hence these EILs have been adopted for this assessment. For this assessment the exposure setting has been set to mark the lowest observable effect concentration (LOEC) with effect concentration of EC30 in an environment of ecological significance (namely the riparian zone of Eastern Creek).

The values presented for zinc, chromium (III), copper and lead are added contaminant limits (ACLs) based on added concentrations. The EIL is calculated from summing the ACL and the ambient background concentration (ABC) to derive the site-specific soil quality guideline (SQG) taking into account the effect caused by pH, exchangeable cations, iron and total organic carbon in soil that can affect concentration toxicity data.

No samples were analysed for cation exchange capacity (CEC) or iron content which are required to calculate site specific EILs. For this reason, conservative values have been used instead. The EIL for lead has been calculated using the most conservative SQG value based upon the reported pH and exchangeable cation values. A summary of the EILs for aged contamination in soil (>2 years) for the adopted land use are presented in **Table 8**.

Table 8: Site specific EILs

Analyte	Ambient background concentration (mg/kg) ¹	Added contaminant limit (mg/kg)	EIL – commercial / industrial (mg/kg)
Western Portion			
Arsenic	----	----	160
Naphthalene	----	----	370
Chromium III	10	310	320
Copper	30	85	115
Lead	----	1,800	1,800
Nickel	5	55	60
Zinc	120	110	330
Eastern Portion			
Arsenic	----	----	40
Naphthalene	----	----	10
Chromium III	15	60	75
Copper	30	20	50
DDT	----	----	3
Lead	160	470	630
Nickel	5	30	35
Zinc	45	90	135

Notes:

Ambient background concentrations (ABC) were calculated as per Olszowy et al (1995) NSW old suburbs, low traffic. added contaminant limits were determined using most sensitive value for CEC and pH.

6.2 Soil screening levels

6.2.1 Health screening levels (HSLs)

For petroleum hydrocarbons, health screening levels (HSLs) have been derived in ASC NEPM (2013) based upon fraction ranges of hydrocarbons together with soil texture classes. The actual soil texture class applied will be determined during description of soil in the field assessment.

The HSL criteria, whilst non-limiting (NL) for vapour intrusion, are provided to prevent the occurrence of phase-separated hydrocarbons (PSH). The soil texture for applications of HSLs at the site will be “clay”. Fractions F3 ($>C_{16}-C_{34}$) and F4 ($>C_{34}-C_{40}$) are semi-volatile and are not of concern for vapour intrusion, however, exposure to human receptors can occur via direct pathways such as dermal contact.

Health screening levels for HSL-D for clay soil were used to screen petroleum hydrocarbons in soil for potential vapour intrusion risk. Values for clay with depth criterion to four metres was used. The HSL criteria are summarised below in **Table 9**.

6.2.2 Ecological screening levels (ESLs)

For petroleum hydrocarbons, ESLs have been derived in ASC NEPM (2013) based upon fraction ranges of hydrocarbons, BTEXN component and benzo(a)pyrene (BaP) together with soil texture classes. These ESLs are of low reliability except for the volatile and semi-volatile hydrocarbon fractions which are of moderate reliability. Nonetheless the ESLs will be adopted for the investigation to be protective of soils in a commercial / industrial land use scenario.

The adopted ESLs are designed to be protective of soil fauna, soil processes plants. The ASC NEPM (2013) states that these factors only apply within the rhizome (i.e. zone in the top two metres of soil) and as such ESL criteria need not be applied to chemical results below this depth. Criteria are summarised below in **Table 9**.

6.2.3 Management limits for hydrocarbon fractions

Management limits for F1 and F2 are applied after consideration of relevant ESL and HSL criteria and are generally to be protective for dermal contact risk. The adopted management limits are based on fine grained soils with criteria summarised both below in **Table 9**.

Table 9: Management limits, ESLs and HSLs (mg/kg dry soil)

Analyte	Soil Texture	Management Limits	ESLs	HSL D Clay Soils
F1 (C₆- C₁₀)	Coarse	700	215 **	310 (0 - < 1m) 480 (1 - < 2m)
	Fine	800		
F2 (>C₁₀-C₁₆)	Coarse	1,000	170 **	NL
	Fine	1,000		
F3 (>C₁₆-C₃₄)	Coarse	2,500	1,700	----
	Fine	3,500	2,500	
F4 (>C₃₄-C₄₀)	Coarse	10,000	3,300	----
	Fine	10,000	6,600	
Benzene	Coarse	----	75	4 (0 - < 1m) 6 (1 - < 2m) 9 (2 - < 4m)
	Fine	----	95	
Toluene	Coarse	----	135	NL
	Fine	----	135	
Ethyl-benzene	Coarse	----	165	NL
	Fine	----	185	
Xylenes	Coarse	----	180	NL
	Fine	----	95	
Naphthalene	Coarse	----	----	NL
	Fine	----		
Benzo(a)pyrene	Coarse	----	1.4	----
	Fine	----	1.4	

Notes:

** Moderate reliability criteria

NL No risk-based limits are required to be assessed

6.2.4 Waste classification criteria

In accordance with NSW EPA *Waste Classification Guidelines: Part 1 Classification of Waste* (Waste Guidelines), soils requiring offsite disposal from a site have to be classified as either general solid waste (GSW), restricted solid waste (RSW), hazardous waste (HAZ) or special waste (for instances where asbestos is present). The waste criteria for the chemicals of concern tested should material require disposal offsite are presented:

- total concentration / contaminant threshold (CT) only (**Table 10**); or
- total concentration / specific contaminant concentration (SCC) with toxicity characteristic leaching procedure (TCLP) testing (**Table 11**).

Table 10: Waste disposal criteria without TCLP

Analyte	Maximum values of total concentration for classification without TCLP	
	General Solid waste (CT1)	Restricted Solid Waste (CT2)
	Total Concentration	Total Concentration
Arsenic	100	400
Benzene	10	40
Benzo(a)pyrene	0.8	3.2
Cadmium	20	80
Chromium (VI)	100	400
Ethylbenzene	600	2400
Lead	100	400
Mercury	4	16
Nickel	40	160
PAHs (total)	200	800
TPH fraction (C6 – C9)	650	2,600
TPH fraction (C10 – C36)	10,000	40,000
Toluene	288	1152
Xylenes (total)	1000	4000

Notes

Totals expressed as mg/kg on a dry weight basis;

N/A - not applicable as classification based on total concentration (TC);

Where values exceed the restricted solid waste criteria, the waste is classified as hazardous.

The process of classification requires that should any one analyte exceed the GSW criteria (but remain beneath the restricted solid waste criteria) then the waste would be classified as RSW. Conversely, if all analytes are below the GSW criteria then the waste can be classified as GSW. Statistical analysis including but not limited to 95% upper confidence limits must also be considered when undertaking waste classification.

A special classification for specific natural immobilisation may apply to material that contains black carbon which is a source of sparingly leachable PAHs. Application to the regulator should be sought for a specific immobilisation approval.

Table 11: Waste disposal criteria with TCLP

Chemical	Maximum values for leachable concentration and total concentration when used together			
	General Solid waste		Restricted Solid Waste	
	TCLP	Total	TCLP	Total
Arsenic	5.0	500	20	2,000
Benzene	0.5	18	2	72
Benzo(a)pyrene	0.04	10	0.16	23
Cadmium	1.0	100	4	400
Chromium (VI)	5	1,900	20	7,600
Ethylbenzene	30	1,080	120	4,320
Lead	5	1,500	20	6,000
Mercury	0.2	50	0.8	200
Nickel	2	1,050	8	4,200
TPH fraction C6 – C9	N/A	650	N/A	2,600
TPH fraction C10 – C36	N/A	10,000	N/A	40,000
PAHs (total)	N/A	200	N/A	800
Toluene	14.4	518	57.6	2,073
Xylenes (total)	50	1,800	200	7,200

Notes

Totals expressed as mg/kg, TCLP as mg/L;

N/A - not applicable as classification based on total concentration (TC);

Where values exceed the restricted solid waste criteria, the waste is classified as hazardous.

6.2.5 Biosolids screening criteria

As an indicative reference 'Stabilisation Grade A' microbiological standards presented in NSW EPA (2000) - *Guideline for Use and Disposal of Biosolids Products* were adopted (**Table 12**).

Table 12: NSW EPA guidelines for use and disposal of biosolids

Parameter	Standard (Stabilisation Grade A microbiological standards) ¹
E. coli	< 100 MPN ² per gram (dry weight)
Faecal coliforms	< 1,000 MPN per gram (dry weight)
Salmonella sp.	Not Detected / 50 grams of final product (dry weight)

Notes:

1. Stabilisation Grade A microbiological standards: A category used to describe the quality of a biosolids product based on its level of pathogen reduction, vector attraction reduction and odour reduction.
2. MPN: most probable number

6.3 Water screening criteria

Human health and ecological criteria for comparison of water results has been adopted from guidelines presented in the following subsections. Actual screening criteria concentrations for water are presented with the results summary tables in **Appendix E1** (western portion) and **Appendix E2** (eastern portion). As there were no indications from historical information that the site was ever used for bulk storage and/or use of AFFFs, investigation for PFAS chemicals was not undertaken.

6.3.1 Human health

Water analytical results were compared to the ASC NEPM (2013) HSLs for groundwater within clayey soils. The ASC NEPM (2013) groundwater investigation levels (GILs) adopt the drinking water criteria for protection of human health in accordance with the National Health and Medical Research Council (NHMRC) (2011) - *Australian Drinking Water Guidelines*.

6.3.2 Ecological criteria

Water analytical results were compared to ASC NEPM (2013) *Schedule B(1): Groundwater investigation levels* (GILs) for freshwater ecosystems to be protective of 95% of species. These ecological criteria have been adapted from ANZECC/ ARMCANZ (2000).

7 RESULTS

7.1 Field observations

7.1.1 Western portion

Field observations about potential for contamination at each key site feature are summarised in **Table 13**. Photographs of pertinent features are presented in **Appendix C1**. In addition to the areas targeted for investigation in the scope of this study (defined in **Table 1**), a walkover was made around the south east portion of the site (between the Eastern Creek and the high-pressure gas line main). During this walkover, a dry pond bed was noted (**Figure 2A**), which had a pile of rubble in the vicinity of the bank (**Figure 6A**).

A summary of building footprint areas per PAEC, noting structures which contained asbestos in included in **Table 14**.

Table 13: Field observations and potential for contamination

Area of Concern	Site Feature	Field Observations	Relevant Figures	Relevant Photos (Appendix C1)	Potential Contaminants	Contamination Identified
PAEC-1 Former army compound and transmission area	Two UST's identified at the former army compound.	Four test pits were advanced near the identified USTs. Three of the test pits (TP1, TP2, and DP1) did not provide any indication of visual or olfactory petroleum hydrocarbon impact in soil. No groundwater strike was noted at these three locations to the final maximum depth of 4.20 mBGL. Location TP3 was advanced in the vicinity of the tank pit excavation near UST2, and as such encountered sand bedding material. Investigations noted petroleum hydrocarbon impact within saturated bedding material sands. Distinct petroleum hydrocarbon-type odour was noted (commensurate with diesel) and ~2mm thick layer of free product (diesel impacted) was noted floating on the water. Upon further excavation of TP3 the noted product flowed into the test pit from the impacted saturated sand. A sample of this hydrocarbon impacted water (ID: TP3) was collected from this test pit with a bailer. A limited visual assessment was able to be made of one of the USTs by looking through the test pit, which initially indicated a potential capacity of around 5,000 m³ each. The soils surrounding the UST tank pit excavation were noted to be high plasticity clays, which appeared to have limited the spread of hydrocarbons horizontally (the visual and olfactory evidences obtained from the delineation pit [DP1] were further supportive of this observation).	Figure 3A	Photo 1-3	• TRH (C6 – C40) • BTEX • Naphthalene • Heavy metals	Petroleum hydrocarbon impact within to soil, including free product to tank pit bedding aggregate.

Area of Concern	Site Feature	Field Observations	Relevant Figures	Relevant Photos (Appendix C1)	Potential Contaminants	Contamination Identified
	Three abandoned buildings (Buildings 1, 2, and 3) located within the former army compound.	Potential asbestos containing material (PACM) in the form of fibre-cement sheeting was observed in the walls and roof of the administration building (Building 1). The roofing of main army building (Building 2) also appeared to be made of PACM (compressed fibre-cement corrugated sheeting). The roof of workshop (Building 3) was unable to be assessed and no PACM was observed in its immediate vicinity.	Figure 3A	Photo 5 – 8	Bonded ACM	Fragments of bonded asbestos on surface soils and in roof / cladding of structures.
PAEC-2 Former army camp	Former army camp footprint located in the central western portion of the site.	Footprints of decommissioned and demolished buildings were observed in this area, which were evident with residual concrete slabs and foundations. Buried building rubble was noted at TP19 and TP20 down to a depth of ~0.50 mBGL (soil disturbance was obvious at this location, see PAEC-4 below). Natural soil profile was encountered very shallow at 0.00-0.10 mBGL depth at the remaining locations of the footprint (TP17, TP18, SS5, and SS6).	Figure 2A	----	Contaminants associated with poor quality fill: - TRH, - BTEXN, - Heavy metals, - PAH, and - Asbestos	Fragments of bonded asbestos.
	A former incinerator identified near the former army camp footprint.	Ruins of a former incinerator was discovered during the site walkover. Glass bottles were observed in the vicinity of the former incinerator along with a soil mound. Locations TP21 - TP22 were advanced into a soil mound near this incinerator (see PAEC-4 below).	Figure 2A	Photo 17	PAH	Ash
PAEC-3 WWTP	A WWTP containing the following former units Grit chamber	Water was observed in four of the tanks of the WWTP, grit chamber, two primary sedimentation tanks and a distribution chamber. Water samples were collected from the grit chamber and one of the primary sedimentation tanks. No visual / olfactory indications of contamination were noted, with the exception of a slight	Figure 4A	Photo 9-12	- TRH, BTEXN - Heavy metals - Nutrients (e.g. NH₄, biochemical oxygen	Bonded asbestos in structures.

Area of Concern	Site Feature	Field Observations	Relevant Figures	Relevant Photos (Appendix C1)	Potential Contaminants	Contamination Identified
	- Two primary sedimentation tanks - One distribution pit - Two aerobic treatment tanks, and - Two separate sand filters.	sulphuric odour was noted in Primary Sedimentation Tank 1. Tadpoles and green aquatic plants were noted within the tanks of the WWTP. No visual / olfactory indications of contamination were noted. The water sample collected from the Grit Chamber did not note any visual / olfactory indications of contamination. Soil/ biosolid samples were collected from each sand filter (ID: SS1 and SS2). The sand material within these filters appeared to be homogenous, consisted light brown, coarse to medium particles. No visual or olfactory evidence of contamination was noted within these sands.			demand [BOD]) Coliforms and pathogens (e.g. e. coli and salmonella)	
PAEC-4 General Disturbance	Miscellaneous soil mounds and piles throughout the site.	Test pits were advanced into seven soil mounds noted onsite. A summary of field observations within these soil mounds is included in the below suitable: - Mound 1 (TP7) - No visual or olfactory evidence of contamination - Mound 2 (TP8) - Ash particles (1%) - Mound 3 (TP9) - Bitumen road base (20%) with slight hydrocarbon odour - Mound 4 (TP10) - No visual or olfactory evidence of contamination. - Mound 5 (TP11) - Bitumen pieces and an asbestos fragment - Mound 6 (TP9 – TP20) – Building rubble. - Mound 7 (TP21 – TP22) – Broke glass and bonded asbestos fragments. In addition to the soil mounds, piles of soil were observed at various locations throughout the site (see	Figures 5A and 6A	Photos 13 - 16	Contaminants associated with poor quality fill: - TRH, - BTEXN, - Heavy metals, - PAH, and - Asbestos	Mound 2 (TP8) – Ash (1%) Mound 3 (TP9) – Bitumen road base (20%) with slight hydrocarbon odour Mound 5 (TP11) - Bitumen pieces and an asbestos fragment Mound 7 (TP21 – TP22) – bonded asbestos fragments.

Area of Concern	Site Feature	Field Observations	Relevant Figures	Relevant Photos (Appendix C1)	Potential Contaminants	Contamination Identified
		Figures 5A and 5B). No visual or olfactory evidence of contamination was noted at these piles except for the pile located at TP23, which was impacted with bitumen, road base and had a hydrocarbon-type odour.				
	Piles of rubble.	Piles of rubble were noted at two separate locations and were marked on the Figures 5A and 5B	Figure 5A and 6A	Photo 18	No contamination was identified.	
PAEC-5— Surface Waters	Reedy Creek and another unnamed channel combining to form the Eastern Creek at the eastern portion of the site.	Healthy vegetation around the creeks and aquatic flora and fauna was observed at the creek waters. No visual or olfactory evidence of contamination was noted in the creek water.	Figure 2A	Photo 19	Baseline assessment included: • TRH, • BTEXN, • Heavy metals, • Nutrients (e.g. NH₄, biochemical oxygen demand [BOD]), and • Coliforms & pathogens.	None identified

Table 14: Areas of structures noting asbestos

Location ID	Structure	Area (m ²)
PAEC-1	Building 1 (Admin building)	975
	Building 2 (Transmission building)	690
	Building 3 (Workshop)	155
PAEC-2	Former army camp	~ 32,000
PAEC-3	Site shed / BBQ hut	34
	Valve shed	34
PAEC-4	General disturbance	

7.1.2 Eastern portion

Field observations about potential for contamination at each key site feature are summarised below. Photographs of pertinent features are presented in **Appendix C2**.

No primary sources of contamination, contamination uses or areas of gross contamination the surface were identified during site inspection. The main areas where potential contamination might have been introduced to site are via uncontrolled filling / stockpiling, most prevalent in the east storage offset and access road areas. Areas of potential concern included:

- Seven main stockpiles in the east storage offset area.
- Larger area containing waste soil and demolition rubble in the east storage offset area.
- Area of apparent illegal dumping (including PACM fragments) on the western road shoulder of Ferrers Road.

A summary of stockpiles and areas of contamination concern is included in Table 10. Refer to **Appendix C2** for selected photographs of identified stockpiles and **Figures 3B – 6B** for indicative locations.

Table 15: Field observations and potential for contamination

Stockpile	Approximate Dimensions	Field observations	Identified contamination
1	30 m x 6 m x 4 m = ~ 720 m ³	Stockpile completely covered by grass and composed primarily of soil with visible gravels and boulders of building waste (concrete, asphalt, brick). The stockpile was topped by a collection of small mounds. See Photo plates 13 – 15 (Appendix C2).	PACM fragments at two locations
2-5	2.5m x 2.5m x 1m = 4.5 m ³	A cluster of 4 stockpiles all of which were completely covered by grass. Demolition rubble observed both within and surrounding the stockpiles (including brick, concrete, terracotta and metal). See Photo plate 9 (Appendix C2).	Elevated PAHs and lead
6	3m x 1.5m x 1m = ~ 6.25 m ³	Stockpile comprised of two mounds placed overlapping each other, completely covered by grass and highly degraded. During sampling building rubble was noted. See Photo plate 11 (Appendix C2).	None
7	3m x 1.5m x 1m = ~ 6.25 m ³	Stockpile comprised of two mounds placed overlapping each other, completely covered by grass and highly degraded. During sampling building rubble was noted. See Photo plate 10 (Appendix C2).	None
Area of controlled filling	Area ~ 2,800 m ² Est. height ~0.50 m	Area was delineated by irregular soil surface and prevalence of demolition rubble in the area. Test pitting revealed distinctly different soil composition to underlying natural material. See Photo plate 12 (Appendix C2) for example profile.	None
Area of dumped PACM	Area ~ 10 m ²	Area of surface contamination with PACM fragments, likely the site of illegal dumping.	PACM fragments

7.2 Laboratory results

7.2.1 Soil results for potential reuse

Western portion

Results indicated that soil was either reported below the laboratory limit of reporting (LOR) and/or below adopted interim criteria except with the exception of the exceedances summarised in **Table 16**. Refer to **Table A1** in **Appendix E1** for results summary tables against applicable interim criteria. Refer to **Appendix F1** for associated final laboratory certificates and chain-of-custody documentation.

Table 16: Soil guideline exceedances

Location ID	Sample Depth	Analyte	Criteria (mg/kg)	Result (mg/kg)
TP3	1.20 - 1.30 m	TRH (>C ₁₀ -C ₁₆)	ML (1,000)	5,600
		TRH (>C ₁₆ -C ₃₄)	ESL (2,500)	2,720
		Naphthalene	ESL (170)	5,600
TP4	0.00 - 0.20 m	Copper	EIL (85)	87
TP7	0.10 - 0.20 m	Nickel	EIL (60)	114
TP9	0.10 - 0.30 m	Benzo(a)pyrene	ESL (1.4)	2.3
TP12	0.00 - 0.20 m	Copper	EIL (85)	158
		Zinc	EIL (330)	2,590
TP14	0.00 - 0.20 m	Copper	EIL (85)	394
		TRH (>C ₁₆ -C ₃₄)	ML (3,500)	6,460 *
			ESL (2,500)	6,460 *
TP21	0.10 - 0.30 m	Copper	EIL (85)	371
		Nickel	EIL (60)	84
		Zinc	EIL (330)	4,120
	0.80 - 0.90 m	Zinc	EIL (330)	648
TP22	0.20 - 0.30 m	Copper	EIL (85)	258
		Nickel	EIL (60)	46
		Zinc	EIL (330)	4,050

Notes:

3. CT1-2 – Contaminant Threshold 1-2 (NSW EPA, Waste Classification Guidelines – Part 1: Classifying Waste)
4. ML – Management limit (ASC NEPM, 2013)
5. EIL – Ecological Investigation Levels (ASC NEPM, 2013)
6. ESL – Ecological Screening Levels (ASC NEPM, 2013)
7. HSL – Health screening level for commercial / industrial land use (HSL-D) (ASC NEPM, 2013)
8. mg/kg – milligrams per kilogram
9. * Analyte concentration were reduced to 450 mg/kg after silica gel clean-up

Refer to the following figures for corresponding locations of exceedances:

- **Figure 2A** - all sampling locations.
- **Figure 3A** - former army compound layout.
- **Figure 4A** - WWTP layout.

- **Figure 5A and 6A** – areas of soil disturbance (stockpiles / mounds).

Eastern portion

Results indicated that soil was either reported below the laboratory limit of reporting (LOR) and/or below adopted interim criteria except for all analyses soil samples. There were reported exceedance of the ESL for benzo(a)pyrene at SBH2 – SBH5 and the EIL for nickel at SBH2 and SVH5.

Refer to **Table A** in **Appendix E2** for results summary tables against applicable interim criteria. Refer to **Appendix F2** for associated final laboratory certificates and chain-of-custody documentation.

7.2.2 Soil results for provisional waste classification

Western portion

Exceedances of the GSW threshold in the Waste Guidelines have been summarised in **Table 17**.

Table 17: Waste classification guideline exceedances

Location ID	Sample Depth	Analyte	Threshold (mg/kg)	Result (mg/kg)	Provisional Waste Classification
TP9	0.10 - 0.30 m	Benzo(a)pyrene	CT1 (0.8)	2.3	RSW
		Nickel	CT1 (40)	40	RSW
TP11	0.10 - 0.30 m	Benzo(a)pyrene	CT1 (0.8)	1.2	RSW
		Nickel	CT1 (40)	46	RSW
TP12	0.00 - 0.20 m	Lead	CT1 (100)	368	RSW
TP19	0.20 - 0.40 m	Lead	CT1 (100)	135	RSW
TP21	0.10 - 0.30 m	Lead	CT2 (400)	557	HAZ
	0.80 - 0.90 m	Lead	CT1 (100)	222	RSW
TP22	0.20 - 0.30 m	Lead	CT2 (400)	866	HAZ
TP23	1.00 - 1.20 m	Benzo(a)pyrene	CT2 (3.2)	5.7	HAZ

Notes:

CT1-2 – Contaminant Threshold 1-2 (NSW EPA (2014) - Waste Classification Guidelines – Part 1: Classifying Waste)

RSW – Restricted solid waste classification

HAZ – Hazardous waste classification

mg/kg – milligrams per kilogram

Refer to **Appendix E1** for results summary tables against applicable interim criteria. Refer to **Appendix F1** for associated final laboratory certificated and chain-of-custody documentation.

Eastern portion

Soil results were either reported below the LOR and/or below the CT1 threshold for GSW with the exception of those exceedances summarised in **Table 18**. Refer to **Table B2** in **Appendix E2** for results summary tables against applicable interim criteria. Refer to **Appendix F2** for associated final laboratory certificates and chain-of-custody documentation.

Table 18: Waste contaminant threshold exceedances

Sample ID	Material Layer	Analyte	Criteria / Concentration (mg/kg)	Result (mg/kg)
SBH2	FILL	Lead	RSW > 100	280
		Benzo(a)pyrene	HAZ > 3.2	6.5
SBH3	FILL	Lead	RSW > 100	130
		Benzo(a)pyrene	RSW > 0.8	2.3
SBH4	FILL	Lead	RSW > 100	210
		Benzo(a)pyrene	HAZ > 3.2	8.3
SBH5	FILL	Lead	RSW > 100	160
		Benzo(a)pyrene	HAZ > 3.2	11

Notes:

CT – Contaminant threshold (NSW EPA (2014) - Waste Classification Guidelines – *Part 1: Classifying Waste*)

RSW – Restricted solid waste classification

HAZ – Hazardous waste classification

mg/kg – milligrams per kilogram

7.2.3 Asbestos results

Western portion

No asbestos was detected in the soils tested for asbestos presence/ absence (refer to **Appendix E1**). Four of the five PACM fragments tested for asbestos, returned positive results for the presence of bonded asbestos:

- PACM1 collected at TP1,
- PACM2 collected at Administration Building (former army compound),
- PACM3 collected at TP11, and
- PACM4 collected at TP21.

Eastern portion

No asbestos was detected within the 12 samples submitted for analyses for presence/ absence in soil. Three PACM fragments were submitted for analyses for presence / absence in materials with the following two samples returning positive results:

- PACM1 collected from sample STP1 in Stockpile 1; and

- PACM2 collected from sample STP4 in Stockpile 1.

A fragment of material from tipped material on the western verge of Ferrers Road was sampled (ID: PACM3) and returned a negative result for presence of asbestos. Although the one sample tested negative for asbestos, further assessment will be recommended to provide greater confidence that the material is indeed inert rubble. Refer to **Table C2** in **Appendix E2** for asbestos results summary and **Appendix F2** for associated final laboratory certificates and chain-of-custody documentation.

7.2.4 Water quality results

Western portion

All results for surface water were either reported below laboratory limit of reporting and/or below adopted criteria. The results of the laboratory analysis of WS4, which is the sample that was collected from the junction point of the two onsite creeks (downstream), indicated that the surface water quality at this location satisfied the drinking water criteria specified in ASC NEPM (2013).

Analysis results also indicated that the water stored at the grit chamber of the WWTP (WS1), which is the tank that was expected to potentially contain the highest level of contaminants at the WWTP, satisfied the drinking water criteria of ASC NEPM (2013). The water quality results are tabulated in results summary **Table B1** presented in **Appendix E1**.

Refer to **Appendix F1** for laboratory certificated and chain-of-custody documentation.

Eastern portion

All results for the water collected from the farm dams were either reported below laboratory limit of reporting and/or below adopted criteria with the exception of the sample at DAM-1 which reported dissolved copper and zinc above the ANZECC / ARMCANZ (2000) threshold for protection of freshwater ecosystems.

The water quality results are tabulated in results summary **Table D2** presented in **Appendix E2**. Refer to **Appendix F2** for laboratory certificated and chain-of-custody documentation.

7.3 Microbiological analysis results

Western portion

The following samples were scheduled for microbiological analysis as they were noted to carry a potential for pathogen impact in soils as a result of operation of the former WWTP:

- Two samples collected from sand filters of the WWTP (ID: SS1 and SS2).
- Two samples collected from the outlet channel of the WWTP (ID: TP14_0.0-0.2m and SS4).

- One sample collected from a pile of soil stored northeast of the WWTP (ID: TP16_0.2-0.3m).

The results of the microbial analysis of soil samples are presented in **Table 19** **Error! Reference source not found..** Refer to **Appendix F1** for laboratory certificated and chain-of-custody documentation.

Table 19: Microbial analysis in soil

Analyte	Units	EQL	Criteria (MPN / g ¹)	Sample ID				
				TP14 0-0.2m	TP16 0.2-0.3m	SS1	SS2	SS4
E. coli	orgs/g	2	<100	<3	<3	<3	<3	<3
Faecal Coliforms (FC)	orgs/g	2	<1,000	170	94	76	22	1400
Faecal Streptococci (FS)	orgs/g	1	----	530	5	<3	1100	<4
Heterotrophic Plate Count (25°C)	orgs/g	10	----	16,000	71,000	50,000	91,000	6600
Salmonella sp	----	-----	ND	ND	ND	ND	ND	ND
Total Coliforms (Colilert)	orgs/g	10	----	7,100	140	<10	870	1100

Notes:

MPN: most probable number per gram

ND: Not detected.

Two water samples collected from the WWTP were analysed for total coliforms (including faecal coliforms and E.coli) and salmonella. Results indicated that the coliform levels in the water stored at these tanks were relatively low (< 8 cfu/ 100ml for faecal coliforms and E.coli). Salmonella was noted to be absent in all samples analysed. The results of the microbial analysis of water samples are presented in **Table 20** **Error! Reference source not found..** Refer to **Appendix F1** for laboratory certificated and chain-of-custody documentation.

Table 20: Microbiological analysis in water

Analyte	Units	LOR	WS1	WS2
Coliform	cfu/100 ml	1	~6	~3
E. Coli	cfu/100 ml	1	~8	<2
Faecal Coliforms	cfu/100 ml	1	~8	<2
Faecal Streptococci *	cfu/100 ml	1	~8	~2
Heterotrophic Plate Count (22°C)	cfu/100 ml	1	2800	~3400
Heterotrophic Plate Count (36°C)	cfu/100 ml	1	1600	2500
Salmonella sp.	Detection	----	ND	ND

Notes:

* As the faecal streptococcal counts were less than 100 cfu / 100 ml the FC/FS ratio analysis (a method used to determine the origin of waste water) not applicable.

LOR – Laboratory limit of reporting

cfu/100ml – Coliform forming units per 100ml

Eastern portion

Both samples from DAM-1 and DAM-2 were analysed for microbiological parameters with the sample in DAM-1 reporting detections for faecal coliforms and *E.coli*. DAM-1 also reported a higher bacterial plate count than the sample collected from DAM-2.

Refer to **Table C2** in **Appendix E2** for results summary and **Appendix F2** for associated final laboratory certificates and chain-of-custody documentation.

7.4 Procedures for quality control and quality assurance

Quality control is achieved by using NATA registered laboratories using American Society for Testing and Materials (ASTM) standard methods supported by internal duplicates, the checking of high, abnormal or otherwise anomalous results against background and other chemical results for the sample concerned.

Quality assurance is achieved by confirming that field results, or anticipated results based upon comparison with field observations, are consistent with laboratory results. Also that sampling methods are uniform and decontamination is thorough. In addition, the laboratory undertakes additional duplicate analysis as part of their internal quality assurance program on the basis of one duplicate analysis for every 20 samples analysed.

Field observations are compared with laboratory results when they are not as expected. Confirmation, re-sampling and re-analysis of a sample are undertaken if the results are not consistent with field observations and/or measurements. In addition, field duplicate sample results have to be within the acceptable range of reproducibility. A discussion of the quality of internal laboratory results and field duplicate relative percentage difference (RPD) calculations are presented in the QAQC section (**Appendix G1** and **Appendix G2**).

8 DISCUSSION

8.1 Soil chemical analysis

8.1.1 Western portion

All samples analysed were below the health investigation/ health screening criteria for a commercial/ industrial land use scenario (HIL-D and HSL-D), indicating the suitability of the site for the proposed land use.

Screening criteria for dermal contact (management limits) were exceeded at the following two locations:

- TP3 adjacent to the USTs, management limit for TRH ($>C_{10}-C_{16}$) hydrocarbon fraction was exceeded. This was attributed to the identified hydrocarbon leak detected from the USTs.
- TP14 located at the outlet point of the WWTP, management limit for TRH ($>C_{16}-C_{34}$) hydrocarbon fraction was initially exceeded. Following additional analyses using silica gel clean-up for the $> C_{10}$ fractions, this analyte was reported below applicable management limit criteria. Silica gel clean up strips the non-polar hydrocarbons from the sample leaving only those attributed to petroleum.

Exceedances of the ESL for benzo(a)pyrene (BaP) were detected at TP9, TP11, and TP23. The detections in fill material at TP9 and TP11 are thought to be typical of elevated PAHs driven by observed ash impact within poorer quality fill. The BaP ESL exceedance at TP23 could be attributed to bitumen / road base gravels noted throughout the fill profile at this location. These BaP exceedances are well below the HIL-D criteria for BaP TEQ, hence they can remain onsite but would preferably be required to be buried at depth (> 2 m).

EIL criteria was exceeded at TP4, TP7, TP9, and TP11, TP12, TP14, TP21, and TP22. Given that the site will be redeveloped for commercial / industrial use, with a large majority covered by structures and/or hardstand, the ecological value for these soils will be relatively low.

8.1.2 Eastern portion

All samples analysed were below adopted human health criteria for onsite use in a commercial / industrial land use scenario.

There were four stockpiles of uncontrolled fill sampled in area of the proposed new access road which reported elevated concentrations of PAHs in soil, with the corresponding benzo(a)pyrene concentrations reported above the ESLs (ID: SBH2 – SBH5). Samples SBH2 and SBH5 also exceeded the EIL for nickel.

This impact is considered localised and confined to the extent of the stockpile footprint. Coverage samples tested on the proposed new access road footprint (ID: BH1 – BH7) did not note any visual / olfactory indications of contamination, nor did the corresponding laboratory results confirm any chemical impact.

In the eastern offset area there was a stockpile of earth located in the eastern offset area (ID: Stockpile 1) (refer to **Figure 3B**) which incorporated what also appeared to be relatively uncontrolled fill material.

General assessment of surface soils in the remainder of the eastern offset area (ID: COMP1 – COMP-6) and the entirety of the western offset area (ID: COMP-7 – COMP-9) did not note any visual / olfactory indications of contamination, nor did the corresponding laboratory results confirm any chemical impact.

Assessment of the material comprising the levee walls of both Dam No.1 and Dam No.2 did not note any visual / olfactory indications of contamination, nor did the corresponding laboratory results confirm any chemical impact.

8.2 Unexploded ordinance (UXO)

Based upon a preliminary review of potential UXO risk undertaken by JBS&G (2018) (<http://www.defence.gov.au/UXO/Where/Default.asp>), UXO was not considered to be a potential risk. Refer to Appendix H for related correspondence.

8.3 Asbestos

8.3.1 Western portion

Five bonded PACM fragments tested for asbestos returned positive results for the presence of asbestos within the matrix. Locations reporting positive detections included within fill material surrounding former army compound 'Building 1' (locations TP1, TP11, and TP21).

8.3.2 Eastern portion

Although chemical results were reported below adopted interim criteria, two fragments of bonded asbestos were identified during assessment (ID: PACM1 and PACM2).

The assessment along Ferrers Road (western verge) did not note any visual or olfactory indications of contamination within soil during test pitting assessment, however there was a small pile of illegally dumped material noted (refer to indicative location on **Figure 3B**). A sample of this material was analysed for asbestos (ID: PACM3) however the result tested negative for presence of asbestos.

8.4 Soil microbiological analysis

8.4.1 Western portion

All soil/ biosolid samples that were subject to microbiological analysis were classified as 'Stabilisation Grade A' (NSW EPA, 2000), with the exception of sample SS4, which exceeded the faecal coliform criteria by 40%. This is thought to be associated with the eutrophic environment of the drainage channel and accumulation of nutrients and coliforms (likely originating from livestock manure) transported by run-off waters at this location.

Salmonella was not detected in any samples analysed. Results also indicated that there was not any remarkable pathogen impact at the assessed locations surrounding the WWTP.

In any case, dermal contact with soils on site should be avoided as populations of microbial species may vary with changing environmental conditions. Furthermore, manure produced by the onsite livestock was noted as an existing source of pathogens. Therefore, appropriate PPE (nitrile gloves) should be used when manure impacted soils require handling.

It should be noted that the microbial analysis made in the scope of this study is for indicative purposes only. For potential use or disposal of biosolids, material stored to the northeast of the WWTP (vicinity of TP15 and TP16) should possibly be undertaken in accordance with the (NSW EPA, 2000).

8.4.2 Eastern portion

No microbiological analysis was scheduled for soil in the eastern portion.

8.5 Water chemical analysis

8.5.1 Western portion

All results for surface water were either reported below laboratory limit of reporting and/or below adopted human health and ecological criteria.

The laboratory analysis results of the sample collected from the grit chamber of the WWTP (WS1) reported results for all analytes below adopted GILs for drinking water (ASC NEPM, 2013).

8.5.2 Eastern portion

The result for surface water collected from farm dam No1 reported elevated concentrations of dissolved copper and zinc in excess of ANZECC / ARMCANZ (2000) criteria for protection of freshwater ecosystems. This may be attributable to a higher sedimentation load from Ferrers Road as the stormwater runoff as the waterbody is situated adjacent. Dam No.1 is also smaller in areas and seemingly shallower, resulting in less dilution effects.

This is in comparison to Dam No.1 which is situated approximately 60 metres west of Ferrers Road and reported dissolved copper and zinc within acceptable criteria. This could be attributable to a lower sedimentation load and associated runoff effects.

8.6 Water microbiological analysis

8.6.1 Western portion

Coliform levels were relatively low and no salmonella was detected in the samples collected from the grit chamber and primary sedimentation tanks of the WWTP (WS1 and WS2).

The results report there was no significant pathogen impact to waters tested in the grit chamber and primary sedimentation tanks of the WWTP (WS1 and WS2).

In any case, dermal contact with the water stored at the WWTP and should be avoided as populations of microbial species may vary with the changing environmental conditions.

8.6.2 Eastern portion

Elevated biological impact was noted in Dam No.1 which reported detections for *e.coli* and faecal coliforms, and a much higher bacterial plate count than for Dam No.2.

9 CONCLUSION

Based upon the results and findings of the assessment, Environmental Earth Sciences considers that the site is suitable for the proposed commercial development pending that the management recommendations are followed (refer to Section 10).

A summary of identified risk profile from contamination in an updated CSM is provided in the following subsections.

9.1 Areas of concern and risk profile

In the scope of this investigation the PAEC, which were reported in Zoic (2017), were further investigated and updated – renamed as areas of concern (AOC) according to the findings of this assessment.

The updated AOCs along with risk driver, estimated extents and volumes of materials that may require management are presented in **Table 21**. These are also illustrated on **Figure 7A**.

9.1.2 Eastern portion

From the findings and results of this assessment, recommendations for the management of soil / material in the main identified risk areas are detailed in **Table 22**. Note that both a reuse status and provisional waste classification has been provided.

Table 21: Updated areas of concern – Western portion

Area of Concern	Description	Issue	Type and Estimated Amount of Material to be Managed
AOC-1	Former Transmission Compound	Primary sources of petroleum hydrocarbon impact (storage equipment) still in-place. Secondary petroleum hydrocarbon impacts (soil and perched water) in vicinity of TP3 (this confirmed through observations and laboratory assessment).	Petroleum hydrocarbon impacted bedding sand ~ 37 m³ (Refer to volume calculations on Error! Reference source not found. within Appendix G).
	Asbestos in buildings	Asbestos was detected at various parts of the administration building (Building 1) in the former Army Compound. It was also suspected that the roofs of main army building (Building 2) and workshop (Building 3) comprised of corrugated fibre-cement sheeting. Following demolition there would be PACM impacted soil in building footprints requiring management.	Fibre-cement sheeting ~ 4,901 m² (Refer to Error! Reference source not found. in Appendix G for details) PACM impacted soil over three building footprints over 1,820 m ² footprint (assuming top 0.10m requires management) = ~ 182 m³
AOC-3	WWTP	Water was noted at four different tanks at the WWTP. Although the water sample collected from this location satisfied the drinking water criteria, the amount of water stored in this structure is considered significant and will need to be managed during the decommissioning of this structure.	Total amount of water stored at WWTP tanks was estimated as 423 m³ (see Error! Reference source not found. in Appendix G for details)
		Likely asbestos within cladding of shed / BBQ structure, and valve shed. Following demolition there would be PACM impacted soil in building footprints requiring management.	Fibre-cement sheeting in shed / BBQ structure estimated to be approximately 102 m² (~1.2 tonnes). PACM impacted soil in foot print over 68 m ² footprint (assuming top 0.10m requires management) = ~ 7 m³
AOC-4	Soil mounds and piles among the site	Asbestos fragments were observed at soil mounds 5 and 7.	Volume of potentially bonded ACM impacted fill in Mound Nos. 5 and 7 estimated as approximately 395 m³ PACM impacted soil in foot print over 2,272 m ² footprint (assuming top 0.10m requires management) = ~ 228 m³ (see Table 20 in Appendix G for details)

Table 22: Areas of concern and risk profile – Eastern portion

Stockpile	Material	Reuse in commercial / industrial scenario	Provisional Waste Classification	Approximate Dimensions	Risk Status
Stockpile 1	Stockpile	YES	GSW (part special waste asbestos)	30 x 6 x 4 m = ~ 720 m ³	Generally LOW In areas of asbestos detections HIGH
SBH1 Controlled fill in eastern offset	Reworked natural	YES	GSW	Area ~ 2,800 m ² Est. height ~0.50 m	LOW
SBH2	Stockpile	NO	HAZ	2.5m x 2.5m x 1m = ~4.5 m ³	MEDIUM
SBH3	Stockpile	NO	RSW	2.5 x 2.5 x 1 m = ~4.5 m ³	MEDIUM
SBH4	Stockpile	NO	HAZ	2.5 x 2.5 x 1 m = ~4.5 m ³	MEDIUM
SBH5	Stockpile	NO	RSW	2.5 x 2.5 x 1 m = ~4.5 m ³	MEDIUM
SBH6	Stockpile	YES	GSW	3 x 1.5 x 1 m = ~ 6.25 m ³	LOW
SBH7	Stockpile	YES	GSW	3 x 1.5 x 1 m = ~ 6.25 m ³	LOW
Dumped building rubble	Stockpile	NO	Possible special waste asbestos	~ 10 m ² area	HIGH

Notes:

CT – Contaminant threshold (NSW EPA (2014) - Waste Classification Guidelines – Part 1: Classifying Waste)

GSW – General Solid Waste

RSW – Restricted solid waste classification

HAZ – Hazardous waste classification

mg/kg – milligrams per kilogram

10 RECOMMENDATIONS

10.1 Data gaps and recommendations for further assessment

In this assessment the following data gaps were identified that would require management to further delineate risk:

Western portion

- The vertical extent of the hydrocarbon impact beneath the USTs is recommended to be delineated. This can be done during the remediation and validation stage (see Section 10.2).
- The water containing tanks of the WWTP are expected to contain settled solids at the bottom in the form of sediments. Before pumping any water from these tanks, the settled material should be sampled and analysed for a relatively more conservative analytical suite – e.g. TRH (with silica gel clean up), BTEX, naphthalene, heavy metals, PAHs, polychlorinated biphenyls (PCBs), and pathogens. This is because accumulated sediments may contain higher concentrations of contaminants.
- Additional sampling may be undertaken on the piles of soil, which were not chemically analysed. These piles of soil can be identified from **Figure 5A and 6A** by comparing the areas marked as piles of soil with the sampling locations.

Eastern portion

- Conduct further assessment of the tipped pile of rubble on the western verge of Ferrers Road. Although fragment sample PACM-3 tested negative for asbestos, this rubble should be treated with suspicion to ensure appropriate management takes place.
- Chemical quality of the sediments at the bottom of each farm dam would need to be ascertained. Sediment should be sampled and analysed for contaminants of potential concern (e.g. TRH, BTEX, naphthalene, heavy metals, PAHs and pathogens. This is because accumulated sediments may contain higher concentrations of contaminants.
- Additional TCLP analyses for soil in stockpiles SBH2 – SBH5 is recommended to be undertaken to potentially revise-down the provisional waste classification should offsite management of these materials be opted.

10.2 Remediation action plan

It must be noted that a remediation action plan (RAP) is recommended to be prepared to detail procedures for the appropriate management of contamination pending the final plans for developing the site. The RAP would include, but not limit the following aspects:

- Summary of contamination and information regarding any subsequent detailed assessment to further delineate contamination.
- List of pertinent remediation / management options with an evaluation on the most suitable option(s).

- Unexpected Findings Protocol (UFP) for management of any unexpected contamination / hazardous materials (if required).
- Outline quality control procedures for sampling and laboratory analysis to appropriately validate identified AOCs, characterise material for reuse / disposal, and ascertain the quality of any imported fill material.
- Details volume estimates of potentially impacted material.
- Detail minimum work health and safety (WH&S) requirements, and environment protection considerations.
- The RAP will be prepared with reference to the NSW Office of Environment and Heritage (OEH) - *Contaminated sites: Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011).

The RAP will assist the remediation contractor in preparing a suitable remedial works specification (RWS) that will provide protocols for undertaking the selected remedial option, including programming of the works, material volume estimates, minimum WH&S requirements, and environment protection considerations.

10.3 Remediation works

Provisional recommendations for the remediation / management of the identified contamination onsite are presented in the following subsections.

10.3.1 Western portion

Former Army Compound

- Additional delineation of petroleum hydrocarbon vertical impact to natural soils. This can be considered during the validation stage of the *ex situ* decommissioning of the USTs (see below).
- *Ex situ* decommissioning and destruction of UST1 and UST2 and any associated refuelling infrastructure (primary sources of impact).
- Remediation and management of abovementioned primary sources of hydrocarbon impact, and any secondary sources including hydrocarbon impacted UST pit bedding material (free product and impacted sand / perched water).
- Classification for any petroleum hydrocarbon impact soil material that is proposed for offsite disposal.
- Appropriate validation of tank pit excavation to demonstrate that no unacceptable risk remains to future receptors in a commercial / industrial land use scenario.

Asbestos within former army compound buildings

- Prior to the decommissioning of these buildings an asbestos removal specialist should be engaged, and all ACM should be removed from the structures to be decommissioned.

- For the surface soil impacted with bonded ACM, the recommended strategy for remediation would be to remediate soil by emu picking and clearing as much visible asbestos impact as possible to enable onsite reuse of soils, and appropriate disposal of bonded ACM fragments.

WWTP area

- Disturbance of the settled solids at the bottom of the tanks (refer to Section 9.1) can cause mixing of contaminants into the standing water; this should be avoided as much as practicable. Additional sampling of settled solids identified at the bottom of the tanks should be undertaken prior to any discharge of water. Following testing and assessment of risk a decision can be made about specific management of this water.
- Before discharging this standing water, application for a discharge permit should be considered from the relevant authorities (if required).

Miscellaneous soil mounds stockpiles

- For the localised fill material impacted with bonded ACM (ID: TP1, TP11, TP21, and TP22), recommended strategy for remediation would be to remediate soil by continual process of spreading out in 100mm layers and 'emu picking' as much visible asbestos impact as possible so soil can be reused onsite under a barrier layer. Validation clearance should be undertaken each 100mm layer by a licensed asbestos assessor (LAA).
- Additional sampling of the pile located at TP23 is recommended. If the results of the additional analysis turn out to indicate similar levels of benzo(a)pyrene among the rest of the pile, the impacted material is then recommended to be isolated from flora & fauna – storing the material under a concrete slab or burying it at a depth of > 2 metres below ground level (mBGL) are two possible management options.

10.3.2 Eastern portion

Stockpiled material

For the stockpiles which reported concentrations for lead and PAHs in excess of the Waste Guidelines (ID: SBH2 – SBH5), it is initially recommended to undertake testing of the leachable component using the toxicity leaching characteristic procedure (TCLP). This could potentially revise down to current provisional RSW / HAZ classifications if material is opted for offsite management.

For Stockpile 1 it is recommended to conduct further assessment into the extent of bonded asbestos impact to inform appropriate management either by decreasing the amount of material managed offsite as 'special waste asbestos', or managed onsite under a barrier layer.

Material located at Ferrers Road

For the tipped PACM impact located on the western verge of Ferrers Road, it is recommended that a 'Class B' licensed asbestos removalist be engaged to undertake picking and offsite management of all visible ACM or PACM impact. To verify that all asbestos has been removed, it is recommended that a Licensed Asbestos Assessor (LAA) (be engaged to

supervise removal and provide requisite clearance that all visible asbestos impact has been removed.

10.4 Construction environmental management plan (CEMP)

Prior to proposed development it is recommended that a CEMP be prepared to provide guidance with onsite / offsite management of reported contamination and asbestos. The CEMP would include but not limit the following procedures for management of reported impact depending on the selected strategy:

- Management of general environmental controls, including but not limiting:
 - Dust suppression.
 - Erosion control.
 - Sedimentation control.
 - Water management.
 - Traffic control.
 - Noise / vibration management (if required).
 - Communication plan and contact list of relevant stakeholders.
- Specific management of asbestos including:
 - Preparation of either a standalone Asbestos Management Plan (AMP) referred to in the CEMP, or equivalent procedures documented in this CEMP.
 - Appropriate Work Health & Safety (WH&S) measures to mitigate potential airborne fibre hazard.
 - Decontamination procedures for equipment (wet and dry);
 - Asbestos Removal Control Plan (ARCP).
 - Information on non-friable asbestos removal.
 - Dust/fibre suppression techniques (wet and dry).
 - decontamination procedures for construction workers and equipment (wet and dry).
 - Information for waste tracking in accordance with NSW EPA regulations.
 - Procedures for waste classification and disposal of associated impacted soil as special waste (in accordance with the Waste Guidelines).

- Requirement for Asbestos Hygienist and procedures for asbestos clearance inspection and report.
- Offsite management of soil surplus to requirement:
 - Tracking-out vertical / lateral extents of impacted soil, or soil that is already in stockpile.
 - Material management.
 - Procedure for waste classification testing and disposal of associated impacted soil.
 - Decontamination procedures for construction workers and equipment.
 - Validation soil sampling of excavation to assess successful removal of impacted soil.
 - Validation reporting requirements.
- Water management plan, including discharge requirements for standing water, application for a discharge permit, and liaison with relevant authorities (if required).
- Unexpected Findings Protocol (UFP) for management of any contamination / hazardous materials.

11 LIMITATIONS

This report has been prepared by Environmental Earth Sciences NSW ACN 109 404 006 in response to and subject to the following limitations:

1. The specific instructions received from Western Sydney Parklands Trust;
2. The specific scope of works set out in both PO117164_V3 and PO118089_V2 issued by Environmental Earth Sciences NSW;
3. May not be relied upon by any third party not named in this report for any purpose except with the prior written consent of Environmental Earth Sciences NSW (which consent may or may not be given at the discretion of Environmental Earth Sciences NSW);
4. This report comprises the formal report, documentation sections, tables, figures and appendices as referred to in the index to this report and must not be released to any third party or copied in part without all the material included in this report for any reason;
5. The report only relates to the site referred to in the scope of works being located at the junction of M4 and M7 and along Ferrers Road, Eastern Creek, NSW, formally known as Lot 10 in DP1061237 and part of Lot 5 DP 804051 ("the site");

6. The report relates to the site as at the date of the report as conditions may change thereafter due to natural processes and/or site activities;
7. No warranty or guarantee is made in regard to any other use than as specified in the scope of works and only applies to the depth tested and reported in this report;
8. Fill, soil, groundwater and rock to the depth tested on the site may be fit for the use specified in this report. Unless it is expressly stated in this report, the fill, soil and/or rock may not be suitable for classification as clean fill, excavated natural material (ENM) or virgin excavated natural material (VENM) if deposited off site;
9. This report is not a geotechnical or planning report suitable for planning or zoning purposes; and
10. Our General Limitations set out at the back of the body of this report.

12 REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia (ARMCANZ) (2000). *Australian and New Zealand guidelines for fresh and marine water quality*.
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ENVIRONMENTAL EARTH SCIENCES GENERAL LIMITATIONS

Scope of services

The work presented in this report is Environmental Earth Sciences response to the specific scope of works requested by, planned with and approved by the client. It cannot be relied on by any other third party for any purpose except with our prior written consent. Client may distribute this report to other parties and in doing so warrants that the report is suitable for the purpose it was intended for. However, any party wishing to rely on this report should contact us to determine the suitability of this report for their specific purpose.

Data should not be separated from the report

A report is provided inclusive of all documentation sections, limitations, tables, figures and appendices and should not be provided or copied in part without all supporting documentation for any reason, because misinterpretation may occur.

Subsurface conditions change

Understanding an environmental study will reduce exposure to the risk of the presence of contaminated soil and or groundwater. However, contaminants may be present in areas that were not investigated, or may migrate to other areas. Analysis cannot cover every type of contaminant that could possibly be present. When combined with field observations, field measurements and professional judgement, this approach increases the probability of identifying contaminated soil and or groundwater. Under no circumstances can it be considered that these findings represent the actual condition of the site at all points.

Environmental studies identify actual sub-surface conditions only at those points where samples are taken, when they are taken. Actual conditions between sampling locations differ from those inferred because no professional, no matter how qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden below the ground surface. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from that predicted. Nothing can be done to prevent the unanticipated. However, steps can be taken to help minimize the impact. For this reason, site owners should retain our services.

Problems with interpretation by others

Advice and interpretation is provided on the basis that subsequent work will be undertaken by Environmental Earth Sciences NSW. This will identify variances, maintain consistency in how data is interpreted, conduct additional tests that may be necessary and recommend solutions to problems encountered on site. Other parties may misinterpret our work and we cannot be responsible for how the information in this report is used. If further data is collected or comes to light we reserve the right to alter their conclusions.

Obtain regulatory approval

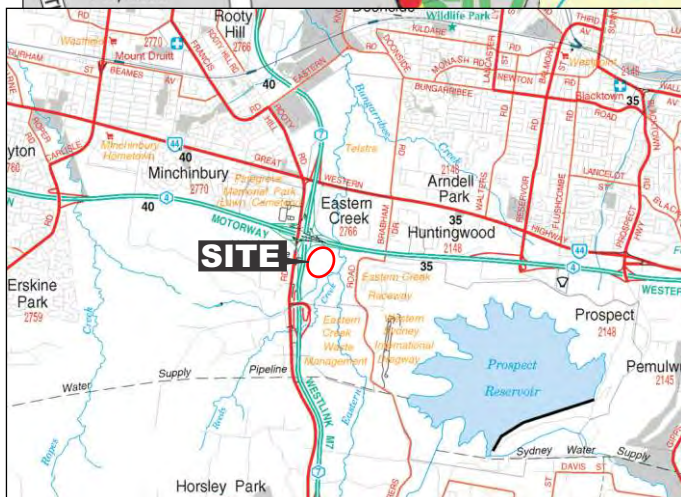
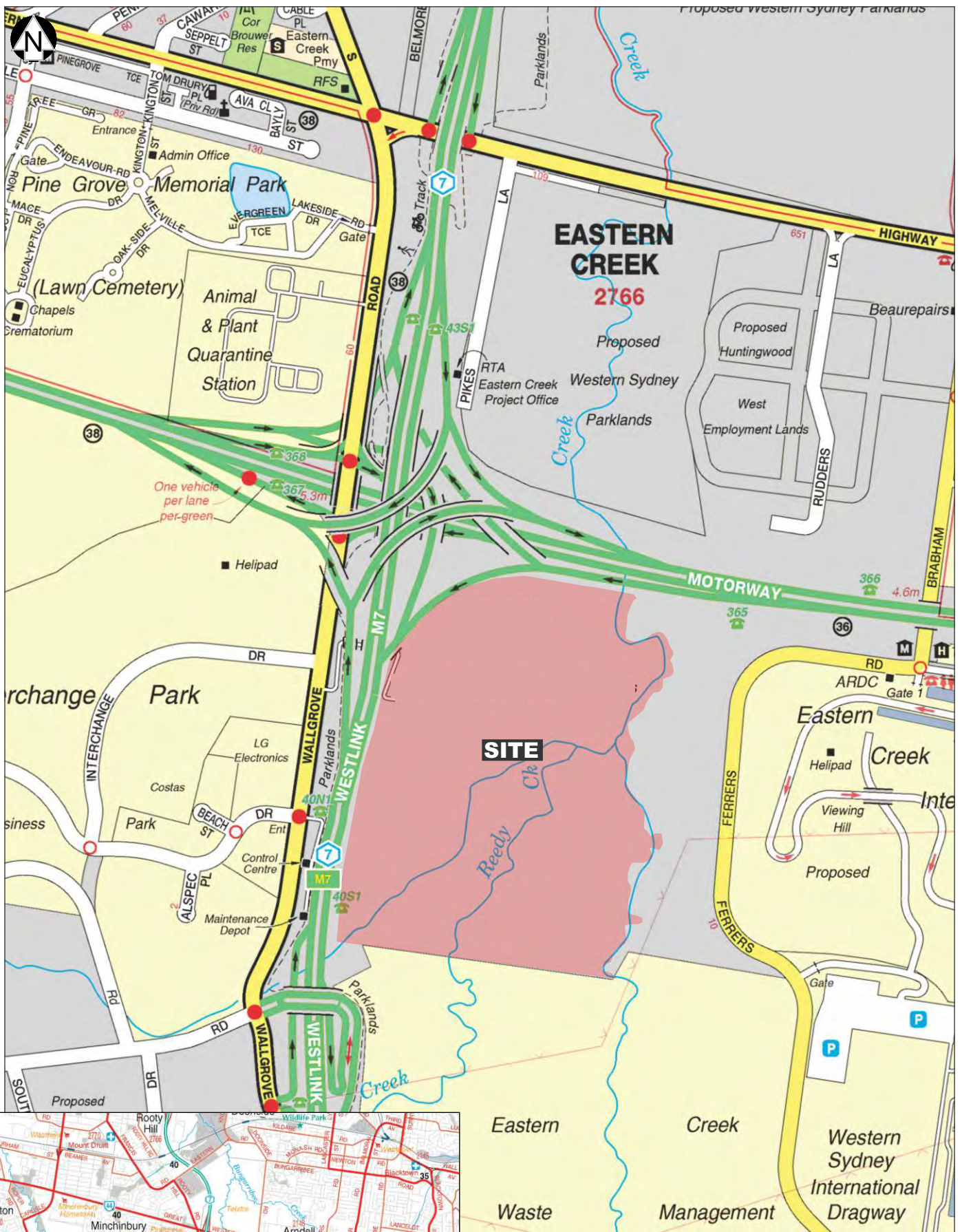
The investigation and remediation of contaminated sites is a field in which legislation and interpretation of legislation is changing rapidly. Our interpretation of the investigation findings should not be taken to be that of any other party. When approval from a statutory authority is required for a project, that approval should be directly sought by the client.

Limit of liability

This study has been carried out to a particular scope of works at a specified site and should not be used for any other purpose. This report is provided on the condition that Environmental Earth Sciences NSW disclaims all liability to any person or entity other than the client in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by any such person in reliance, whether in whole or in part, on the contents of this report. Furthermore, Environmental Earth Sciences NSW disclaims all liability in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by the client, or any such person in reliance, whether in whole or any part of the contents of this report of all matters not stated in the brief outlined in Environmental Earth Sciences NSW's proposal number and according to Environmental Earth Sciences general terms and conditions and special terms and conditions for contaminated sites.

To the maximum extent permitted by law, we exclude all liability of whatever nature, whether in contract, tort or otherwise, for the acts, omissions or default, whether negligent or otherwise for any loss or damage whatsoever that may arise in any way in connection with the supply of services. Under circumstances where liability cannot be excluded, such liability is limited to the value of the purchased service.

FIGURES



Source: UBD Australian City Streets

ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED		Site Location	
Client: Western Sydney Parklands Trust		Location: Cnr. M4 and M7 Motorways, Eastern Creek, NSW	
Project Man: MB		Job No: 117102	
Drawn By: LB		Scale: As Shown	
Date: December 2017		Figure 1A	



Source: © NSW Globe. Google Earth

LEGEND:

- Lot 10 DP 1061237
- Test Pit Location
- Water Sample Location
- Soil Sample Location



Title: **Site Layout and Sampling Locations**
Location: **Cnr. M4 and M7 Motorways, Eastern Creek, NSW**

Client: Western Sydney Parklands Trust		Job No: 117102
Project Man: MB	Scale: As Shown	Figure 2A
Drawn By: LB	Date: December 2017	



Source: © NSW Govt. SIXmaps

LEGEND:

-  Test Pit Location
-  Water Sample Location
-  Soil Sample Location

0 10 20 30 40 50
Scale in Metres

**ENVIRONMENTAL
EARTH SCIENCES**
CONTAMINATION RESOLVED



Title: **Former Army Compound
Layout**

Location: **Cnr. M4 and M7 Motorways,
Eastern Creek, NSW**

Client: **Western Sydney Parklands Trust**

Job No: **117102**

Project Man: **MB**

Scale: **As Shown**

Drawn By: **LB**

Date: **December 2017**

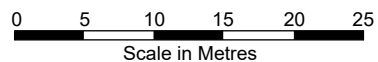
Figure 3A



Source: © NSW Govt. SIXmaps

LEGEND:

-  Test Pit Location
-  Water Sample Location
-  Soil Sample Location



 ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED		Title: Waste Water Treatment Plant (WWTP)	
		Location: Cnr. M4 and M7 Motorways, Eastern Creek, NSW	
Client: Western Sydney Parklands Trust		Job No: 117102	
Project Man: MB		Scale: As Shown	Figure 4A
Drawn By: LB		Date: December 2017	



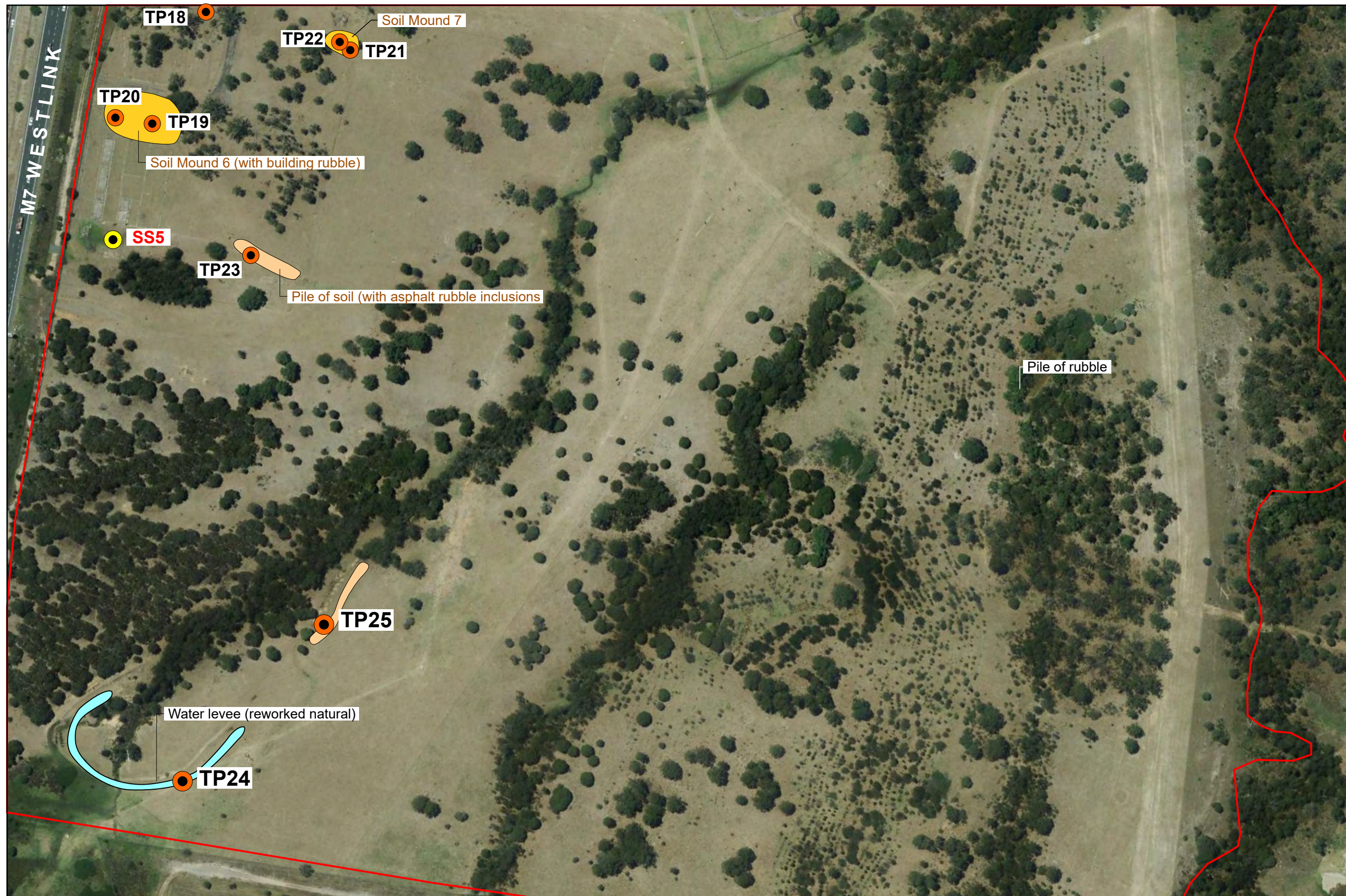
Source: © NSW Globe, Google Earth

LEGEND:

- Lot 10 DP 1061237
- Test Pit Location
- Soil Sample Location
- ▭ Pile of soil



ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED		Title: Soil Disturbance and Piling Map - Northern Section	
		Location: Cnr. M4 and M7 Motorways, Eastern Creek, NSW	
Client: Western Sydney Parklands Trust		Job No: 117102	
Project Man: MB	Scale: As Shown	Figure 5A	
Drawn By: LB	Date: December 2017		



Source: © NSW Globe, Google Earth

LEGEND:

- Lot 10 DP 1061237
- Test Pit Location
- Soil Sample Location
- Pile of soil

0 40 80 120 160 200
Scale in Metres

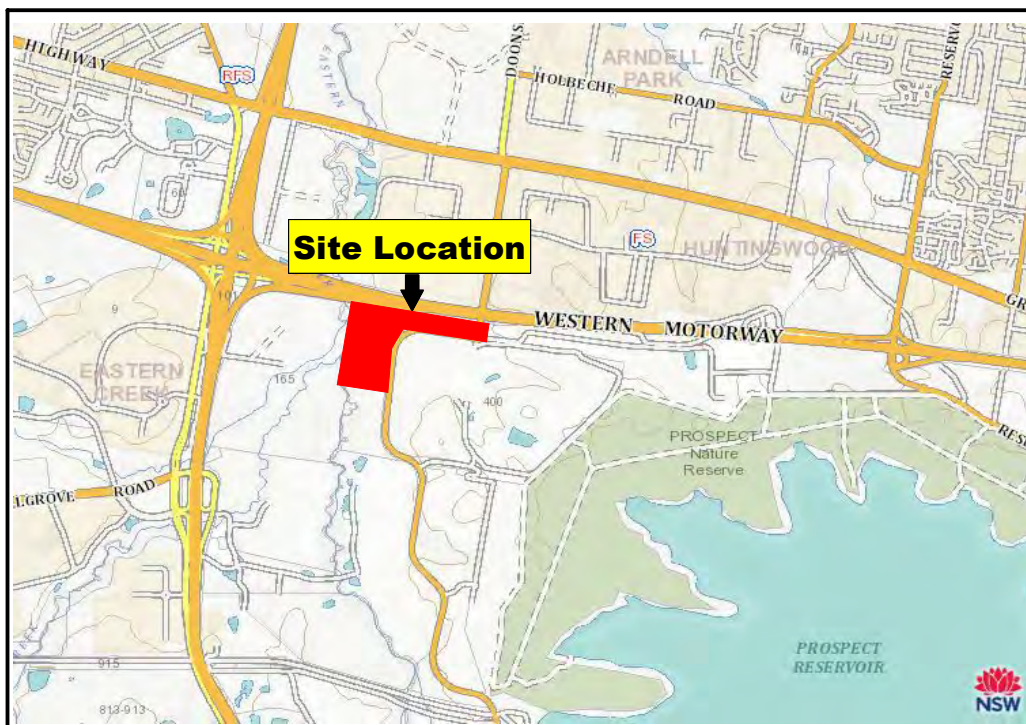
ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED		Title: Soil Disturbance and Piling Map - Southern Section	
		Location: Cnr. M4 and M7 Motorways, Eastern Creek, NSW	
Client: Western Sydney Parklands Trust		Job No: 117102	
Project Man: MB	Scale: As Shown	Figure 6A	
Drawn By: LB	Date: December 2017		



LEGEND

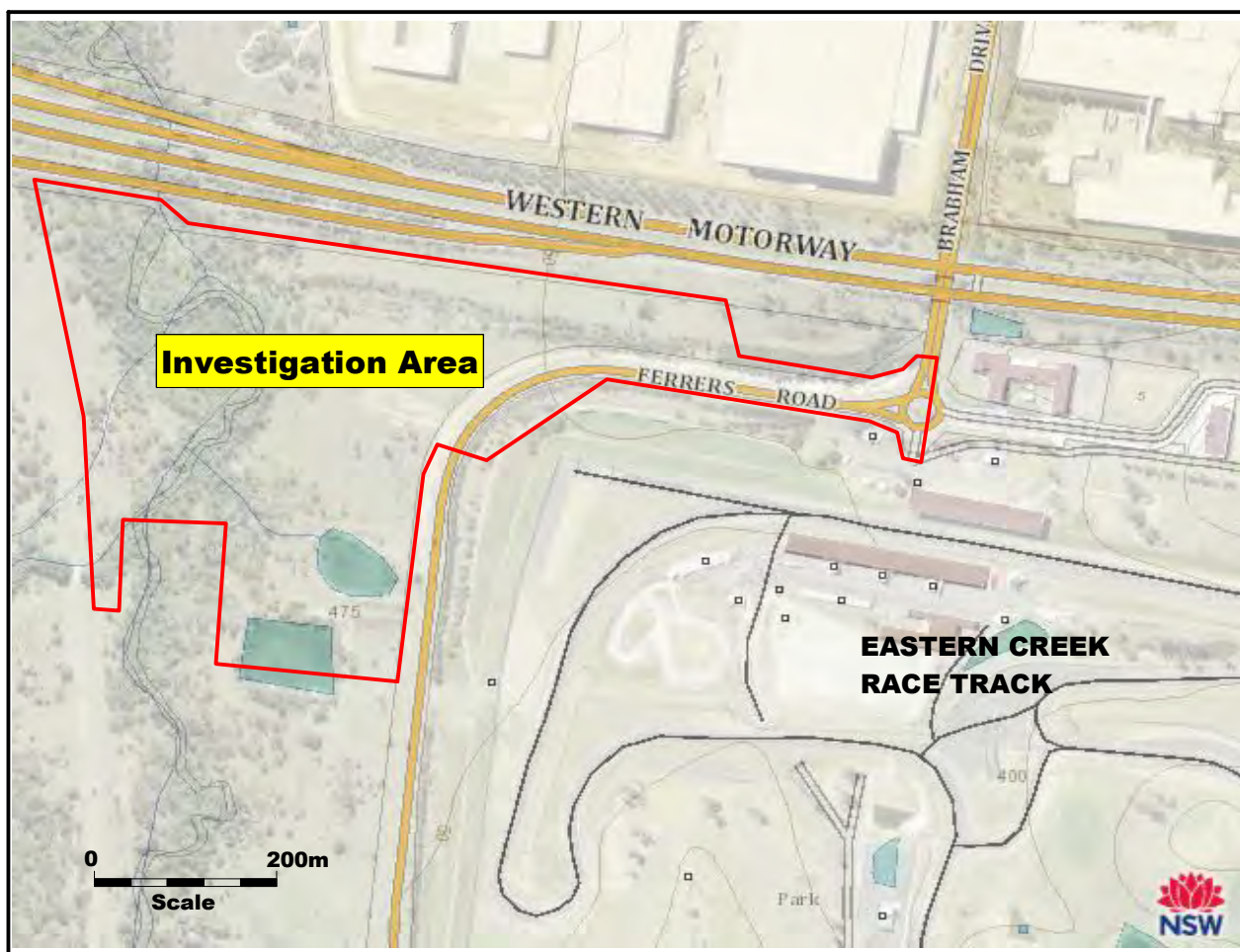
 Area of concern

		Title: Updated Areas of Concern	
		Location: Cnr M4 and M7 Motorways Eastern Creek NSW	
Client: Western Sydney Parklands Trust		Job No: 117102	
Drawn By: CN	Scale: NTS	Source: Six Maps	
Proj Man: CN	Date: Feb 2018	Figure 7A	



Regional Locality Map - Eastern Creek, NSW

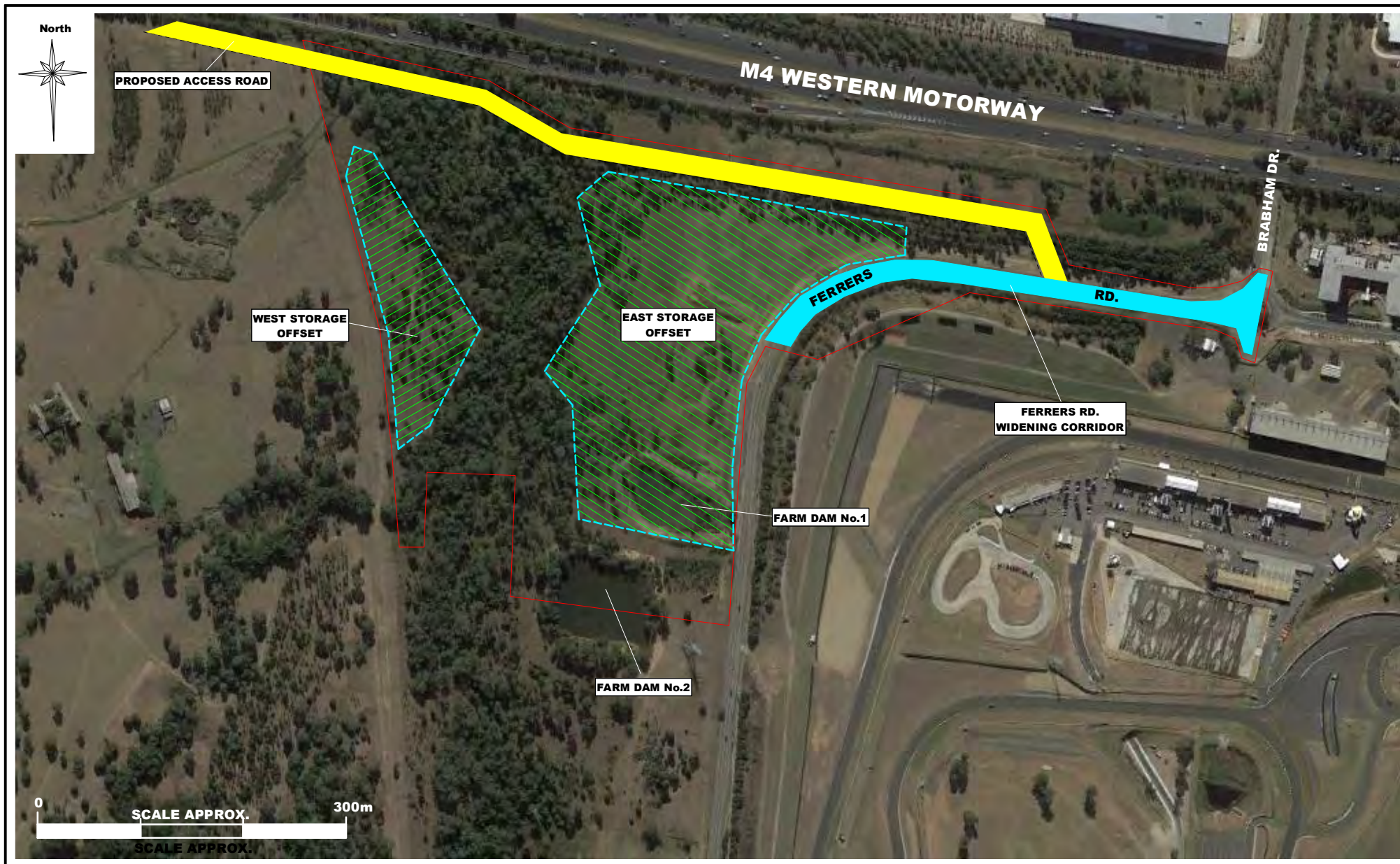
Ref. NSW Spatial Exchange digital image 2018.



Site Locality Map - Ferrers Rd. Eastern Creek, NSW

Ref. NSW Spatial Exchange digital image 2018.

 ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED	Title: Site Location Map		
	Location: Ferrers Road, Eastern Creek, NSW		
	Job No. 118069	Date: 13/07/18	Figure 1B
	Client: Western Sydney Parklands Trust	Drawn by: TRJ Proj. Man. CN Scale: As shown	



INVESTIGATION ZONES

Ref. NSW Spatial Information Exchange SIX. website image. 2018.



Client:
Western Sydney Parklands Trust

Title: **Investigation Zones**

Location: **Ferrers Road, Eastern Creek, NSW**

Job No. 118069

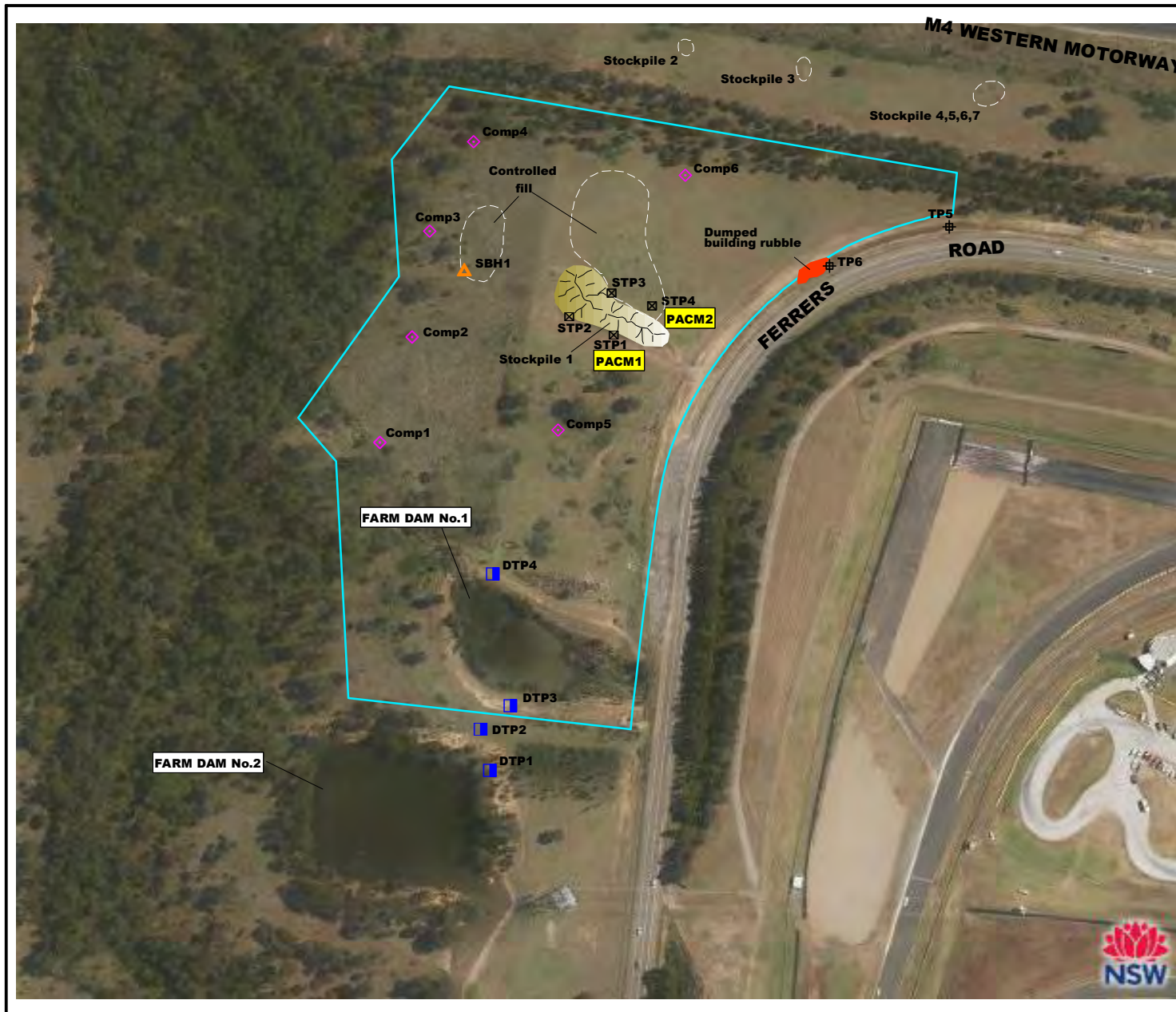
Date: 17/07/18

Drawn by: TRJ

Proj. Man. CN

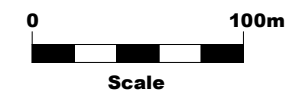
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Figure 2B

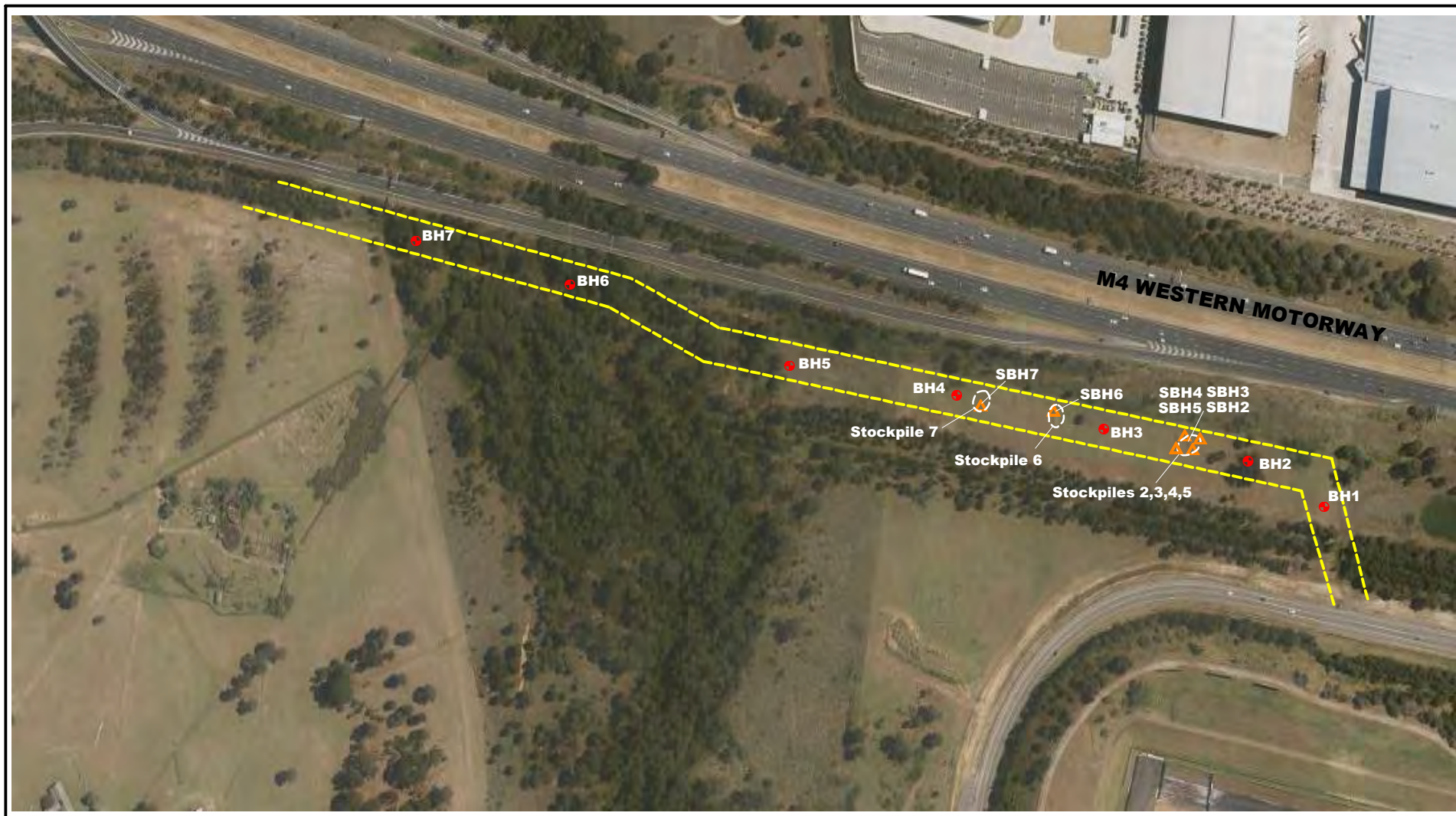


LEGEND:

- ▲ SBH - Stockpile borehole
- ◆ Comp - Composite sample location
- X STP - Stockpile test pit
- + TP - Test pit
- D DTP - Dam test pit
- ACM - Asbestos containing material
- PACM2 - Potential asbestos containing material





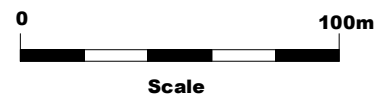
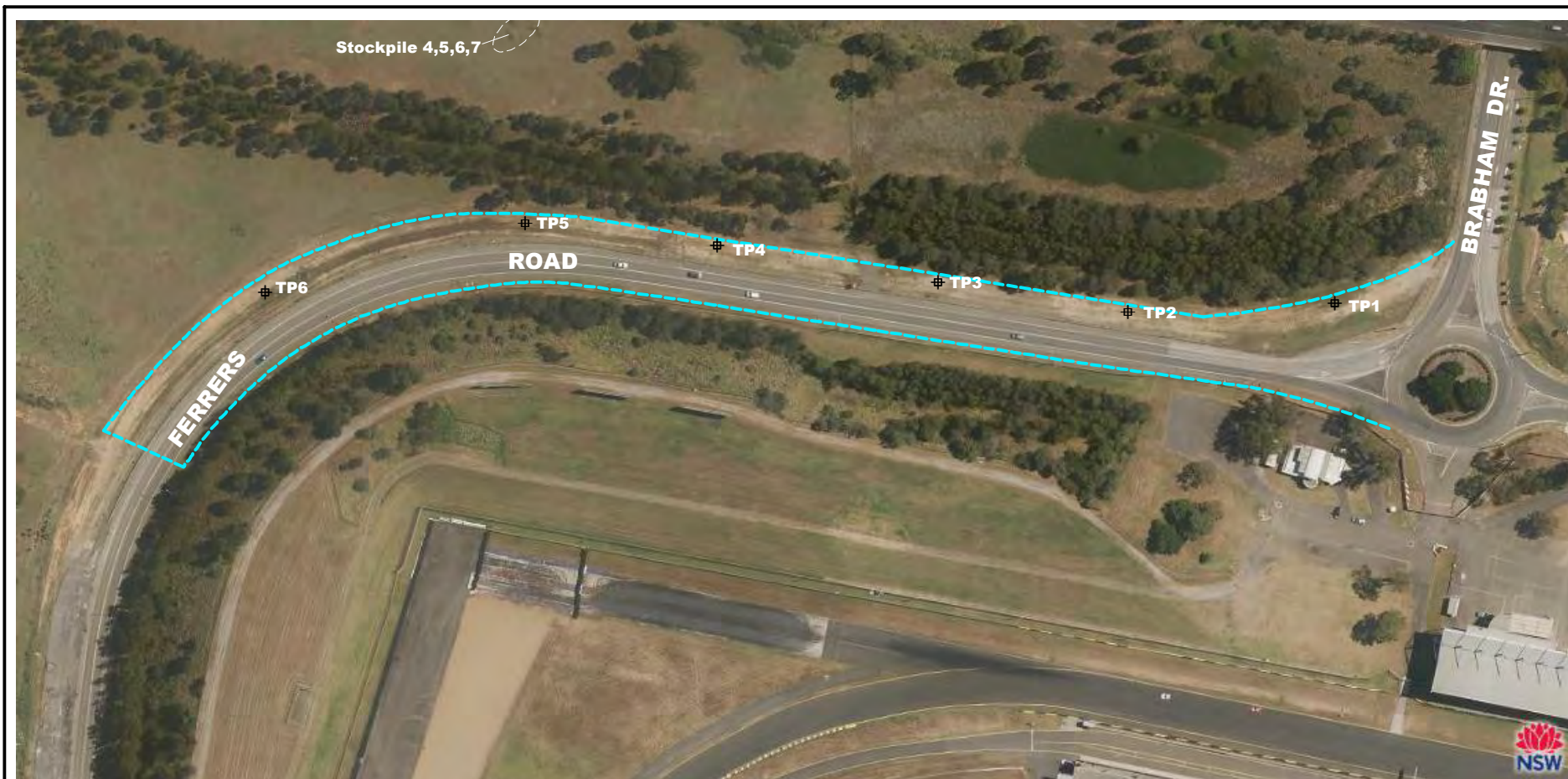


LEGEND:

- ▲ **SBH - Stockpile borehole**
- ⊕ **BH - Borehole**



 ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED	Title: Proposed Access Road - Sampling Locations		
	Location: Ferrers Road, Eastern Creek, NSW		
	Client:	Job No. 118069	Date: 17/07/18
	Western Sydney Parklands Trust	Drawn by: TRJ	Scale: As shown



LEGEND:

⊕ **TP - Test pit**

Ref. NSW Spatial Information Exchange SIX. website image. 2018.

 ENVIRONMENTAL EARTH SCIENCES CONTAMINATION RESOLVED	Title: Proposed Road Widening Corridor - Sampling Locations		
	Location: Ferrers Road, Eastern Creek, NSW		
	Client: Western Sydney Parklands Trust	Job No. 118069	Date: 17/07/18
		Drawn by: TRJ	Scale: As shown

Figure 6B

APPENDIX A1 - BORELOGS WESTERN PORTION

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: DP1	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY							
0	CONCRETE LAYER							No odour throughout profile Ash sand layer noted between 0.1-1.0m
.2	FILL - Coarse sand of ash.			M		3.0		
.4	FILL - Firm, brown/red, gravelly clay. Gravel is coarse (1 - 3 cm), subangular.							
.6								
.8				M		2.5		
1	NATURAL - Firm, red/grey, CLAY.							
1.2								
1.4								
1.6				M		1.6		
1.8								
2								
2.2								
2.4								
2.6	Colour grading to yellow/grey							
2.8				M		2.9		
3								
3.2								
3.4								
3.6								
3.8				M		2.1		
4	End of hole @ 4.0m depth.							



LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP1	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	GRAPHIC LOG	SAMPLES					COMMENTS
			Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY							
0	FILL - Firm, dark brown, silty sand with rootlets.			D		0.3		Asbestos fragments noted on surface.
.2	FILL - Firm, yellow/brown, clay with red and black mottling.							
.4								
.6								
.8								Brick and electric cable noted in fill material.
1				D/M		0.3		
1.2	NATURAL - Firm, red/grey, CLAY.							
1.4								
1.6								
1.8								
2								H2S odour noted.
2.2				D/M		0.7		
2.4								
2.6								
2.8								
3								
3.2								
3.4				D/M		0.3		
3.6	End of hole @ 3.5m due to refusal on bedrock							



LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP2	LOGGED BY: MB
EASTING: -	DRILL TYPE: Excavator		
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY							

0	FILL - Firm, dark brown, gravelly, clayey silt. Cobbles notes. Gravel and cobbles are predominsntly building rubble (concrete, bitumen)..			D/M		0.0		No odour throughout profile Bitumen pieces noted (2 x 5cm)
.2								
.4	NATURAL - Firm, yellow, clayey SILT.							
.6								
.8								
1								
1.2	NATURAL - Firm, red/grey, CLAY.			M		0.4		
1.4								
1.6								
1.8								
2								
2.2								
2.4				M		0.0		
2.6								
2.8								
3								
3.2				M		0.1		
3.4								
3.6								
3.8								
4				M		0.0		
4.2								
End of hole @ 4.2m								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP3	LOGGED BY: MB
EASTING: -	DRILL TYPE: Excavator		
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED: CN
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS	
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level		
	STRATIGRAPHY									
0	FILL - Loose, yellow/white sand.					M		99.7		TP3 advanced within the UST tank pit excavation. Excavation comprised sandy bedding material.
.2										
.4						M		402		Petroleum hydrocarbon impact noted (including visible product) in most of the profile within sandy bedding material.
.6										
.8	FILL - Loose, black sand.									
1										
1.2	FILL - Loose, white sand.					M		414		
1.4										
1.6										
1.8							M		253.5	
2									Water strike @ 2.0m.	
2.2										
2.4						S		83.2		
End of hole @ 2.5m to avoid creating preferential pathway for hydrocarbon.										

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP3	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS	
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level		
	STRATIGRAPHY									
0	FILL - Loose, yellow/white sand.					M		99.7		TP3 advanced within the UST tank pit excavation. Excavation comprised sandy bedding material. Petroleum hydrocarbon impact noted (including visible product) in most of the profile within sandy bedding material.
.2										
.4										
.6						M		402		
.8	FILL - Loose, black sand.									
1										
1.2	FILL - Loose, white sand.					M		414		
1.4										
1.6										
1.8						M		253.5		
2									Water strike @ 2.0m.	
2.2										
2.4					S		83.2			
End of hole @ 2.5m to avoid creating preferential pathway for hydrocarbon.										

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP4	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								

0	FILL - Loose, dark brown/grey, gravelly sand. Gravel is medium, subangular. Minor ash component noted.			M		0.3		No odour throughout profile
.2	NATURAL - Soft, dark grey CLAY.							Minor ash noted within fill material.
.4								
.6								
.8								
1				M		2.6		
1.2	NATURAL - Firm, light brown CLAY.							
1.4				M		1.3		
	End of hole @ 1.5m in natural material.							
1.6								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP5	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	Undisturbed Moisture M=Moist D=Dry S=Saturated								
STRATIGRAPHY									
0	FILL - Firm, brown, clayey silt with rootlets.								No visual or olfactory evidence of contamination
.2	NATURAL - Red, firm CLAY.								
.4									
.6									
.8									
1									
1.2									
1.4									
1.6	NATURAL - Firm, yellow/grey CLAY.								
1.8	End of hole @ 1.8m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP6	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Groundwater Water Strike Standing Water Level	GRAPHIC LOG	SAMPLES					PAGE #: 1/1	
	STRATIGRAPHY			Type	Moisture	pH	PID (ppm)	Water Level		
COMMENTS										

0	FILL - Firm, brown, gravelly, silty clay. Gravel is coarse of building rubble. Cobbles of building rubble noted.								No odour throughout profile
.2									
.4	NATURAL - Red, firm CLAY.								
.6	End of hole @ 0.6m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP7	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
STRATIGRAPHY									
0	FILL - Loose, grey, gravelly, sand. Gravel is fine to coarse (0.5 - 1cm), angular.				D/M		0.1		No visual or olfactory evidence of contamination throughout profile
.2									
.4	NATURAL - Stiff, red CLAY.								
.6									
.8									
1					M		0.5		
1.2									
1.4									
1.6	NATURAL - Stiff, red / brown CLAY.								
1.8									
2									
2.2									
2.4					M		0.4		
End of hole @ 2.5m in natural.									

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP8	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, brown, sandt, gravelly clay. Gravel is fine to coarse, subangular. Minor ash component in sand. Rare cobbles noted.				D/M		0.0		No odour throughout profile
.2									
.4									
.6									
.8					M		0.8		Ash particles (1%) noted between 0 - 1m depth
1									
1.2									
1.4									
1.6	NATURAL - Firm, red / brown CLAY.								
1.8									
2									
	End of hole @ 2.0m in natural.				M		0.6		

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP9	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed	Water Strike		Type	Moisture	pH	PID (ppm)	Water Level	
	Undisturbed	Standing Water Level							
	Moisture M=Moist D=Dry S=Saturated								
	STRATIGRAPHY								
0	FILL - Firm, brown, gravelly, clay. Gravel is fine to coarse of blue metal (5%) and road base (20%). Rare cobbles noted.				D/M		0.3		Slight petroleum hydrocarbon odour noted amongst road base
.2									
.4									
.6									
.8									
1	NATURAL - Firm, orange CLAY.								
1.2									
1.4					D/M		0.3		
	End of hole @ 1.5m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP10	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, brown/red clay.					D/M	0.0	No visual or olfactory evidence of contamination throughout profile	
.2									
.4									
.6									
.8									
1	NATURAL - Firm, yellow/grey CLAY.					D/M	0.0		
1.2	End of hole @ 1.2m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP11	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
STRATIGRAPHY									
0	FILL - Firm, brown, gravelly clay. Gravel is fine to coarse, subangular. Fibro-cement fragments noted on surface.								3 x PACM fragments (10 x 3cm) taken
.2									
.4									Slight hydrocarbon odour noted on bitumen
.6	FILL - Firm, brown, gravelly clay. Bitumen fragments present.								
.8	NATURAL - Firm, yellow/brown CLAY.								
1									
1.2									
1.4									
1.6									
1.8									
2	End of hole @ 2.0m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP12	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed	Water Strike		Type	Moisture	pH	PID (ppm)	Water Level	
	Undisturbed	Standing Water Level							
	Moisture M=Moist D=Dry S=Saturated								
	STRATIGRAPHY								
0	NATURAL - Firm, brown/red clay.								No visual or olfactory evidence of contamination throughout profile
.1					M		0.2		
.2	NATURAL - Firm, yellow/grey CLAY.								
.3									
.4					M		0.0		
.5	End of hole @ 0.5m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP13	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 22 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 22 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, brown/red clay. Minor ash noted on surface.					M	0.4		Ash noted on surface. No odour throughout profile
.1									
.2	NATURAL - Firm, yellow/grey CLAY.					M	0.7		
.3									
.4									
.5	End of hole @ 0.5m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP14	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	NATURAL - Soft, dark grey SILT with rootlets.				M		1.3		No visual or olfactory evidence of contamination throughout profile
.1									
.2	NATURAL - Firm, grey CLAY.								
.3									
.4					M		2.4		
.5	End of hole @ 0.5m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP15	LOGGED BY: MB
EASTING: -	DRILL TYPE: Excavator		
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, yellow/grey, gravelly, silty clay.					D/M	1.1		No visual or olfactory evidence of contamination throughout profile
.1									
.2									
.3	NATURAL - Firm, dark brown, silty CLAY.								
.4									
.5									
.6	End of hole @ 0.6m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP16	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Loose, light brown, coarse grained, gravelly sand Gravel is fine, subangular.					D/M	1.4		No visual or olfactory evidence of contamination throughout the profile
.2									
.4									
.6									
.8	NATURAL - Firm, brown, silty CLAY.				M		2.7		
1									
1.2									
1.4									
	End of hole @ 1.5m in natural.								
1.6									

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP17	LOGGED BY: MB
EASTING: -	DRILL TYPE: Excavator		
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
STRATIGRAPHY									
0	FILL - Loose, brown, silty sand with rootlets.				D/M		0.5		No visual or olfactory evidence of contamination throughout profile
.1	NATURAL - Firm, red/brown CLAY.								
.2									
.3									
.4									
.5					D/M		0.8		
.6	End of hole @ 0.6m in natural.								



LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP18	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Loose, brown, silty sand with rootlets.				D/M		0.1		No odour throughout profile
	NATURAL - Firm, brown/red CLAY.								Building rubble noted on surface.
.2									
.4									
.6	NATURAL - Hard, yellow/light grey, SHALE.								
.8									
				M			0.5		
1	End of hole @ 1.0m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP19	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, gravelly, silty sand. Building rubble noted on surface.					D/M	0.9		No odour throughout profile
.2									
.4	NATURAL - Firm, yellow/grey CLAY.								
.6									
.8									
1	End of hole @ 1.0m in natural								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP20	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS	
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level		
	STRATIGRAPHY									
0	FILL - Firm, gravelly, silty sand. Building rubble noted on surface.									No odour throughout profile
.2						M	2.1			
.4										
.6	NATURAL - Firm, red/brown CLAY.									
.8										
1										
1.2	End of hole @ 1.2m in natural.				M	0.7				

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP21	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS	
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level								
	STRATIGRAPHY					Type	Moisture	pH		PID (ppm)
0	FILL - Loose, brown, gravelly, silty sand. Building rubble noted on surface including firbo-cement fragments (2%) and broken glass (8%).					D		0.3		PACM 4 taken
.2										
.4										
.6										
.8										
1	NATURAL - Firm, red/brown CLAY.					D		0.4		
1.2										
1.4										
1.6	End of hole @ 1.5m in natural.				D/M		0.3			

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP22	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level							
	STRATIGRAPHY								
			Type	Moisture	pH	PID (ppm)	Water Level		
0	FILL - Loose, grey, gravelly, silty sand. Building rubble noted on surface including broken glass and fibro-cement fragments.						0.7		Fibro-cement sampled for asbestos.
.2									
.4									
.6	NATURAL - Firm, brown/red CLAY.								
.8					D/M		0.2		
1	End of hole @ 1.0m in natural.								

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP23	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS	
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level		
STRATIGRAPHY										
0	FILL - Loose, brown, gravelly sand. Gravel if medium to coarse of blue metal and crushed bitumen.					D/M		0.5		Bitumen / roadbase gravels noted throughout fill material layer.
.2										
.4										
.6										
.8										
1										
1.2	NATURAL - Firm, brown CLAY.				D/M		0.3			
1.4										
1.6					M		0.3			
1.8										
End of hole @ 1.7m in natural.										

LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP24	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	▼ Water Strike ▽ Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
	STRATIGRAPHY								
0	FILL - Firm, brown, silty clay.					D/M	0.6		No visual or olfactory evidence of contamination throughout profile
.2									
.4									
.6	NATURAL - Firm, dark grey, clayey SILT.								
.8									
1									
1.2	End of hole @ 1.2m in natural.					D/M	0.3		

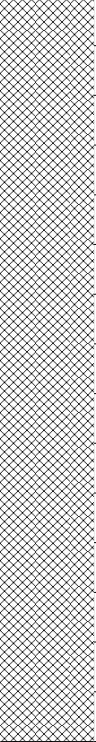
LOCATION: Eastern Creek, NSW	JOB No. 117102	TRENCH NUMBER: TP25	LOGGED BY:
EASTING: -	DRILL TYPE: Excavator		MB
NORTHING: -	DATE STARTED: 23 / 11 / 2017	CLIENT: Western Sydney Parklands Trust	APPROVED:
ELEVATION:	DATE FINISHED: 23 / 11 / 2017		CN

Depth (metres).	Sample	Groundwater	GRAPHIC LOG	SAMPLES					COMMENTS
	Disturbed Undisturbed Moisture M=Moist D=Dry S=Saturated	Water Strike Standing Water Level		Type	Moisture	pH	PID (ppm)	Water Level	
STRATIGRAPHY									
0	FILL - Firm, brown, silty clay.					D/M		0.5	No visual or olfactory evidence of contamination throughout profile
.2									
.4									
.6	NATURAL - Dark grey, clayey SILT.								
.8					M		0.3		
1									
1.2	End of hole @ 1.2m in natural.								

APPENDIX A2 – BORELOGS EASTERN PORTION

Geological Borelog

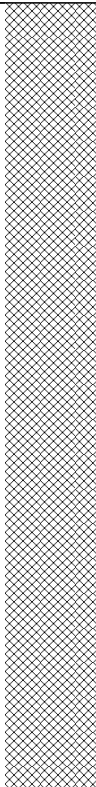
LOCATION: Eastern Creek - Farm dam 2		Borehole Log: DTP1	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Firm, light yellow / brown, silty clay with rootlets.		0.2 0.4 0.6 0.8 1.0 1.2 1.4	—	DTP1-1					No visual or olfactory indications of contamination through profile.
NATURAL Loose, light brown / grey, SILTY CLAY with rootlets.		1.6	—	DTP1-2					Test pit advanced into side of farm dam levee wall.
End of hole @1.7m (Natural layer encountered).		1.8 2.0 2.2 2.4 2.6 2.8 3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

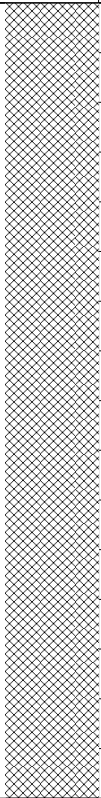
LOCATION: Eastern Creek - Farm dam 2		Borehole Log: DTP2	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Firm, light yellow / brown, silty clay with rootlets.		0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6	—	DTP2-1					No visual or olfactory indications of contamination throughout profile.
NATURAL Loose, light brown/grey, SILTY CLAY with rootlets.		1.6 1.8 2.0							Test pit advanced into side of farm dam levee wall.
End of hole @2m (Natural layer encountered).		2.0 2.2 2.4 2.6 2.8 3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

LOCATION: Eastern Creek - Farm dam 1		Borehole Log: DTP3	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER:	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Stiff, light brown / yellow, silty clay, with rootlets.		0.2		DTP3-1					No visual or olfactory indications of contamination throughout profile. Large clods of denser clay material. Small sections of reworked natural.
		0.4							
		0.6							
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
NATURAL Loose, light brown / grey, SILTY CLAY with rootlets.		1.8							Test pit advanced into side of farm dam levee wall.
		2.0							
End of hole @ 1.9 m (Natural layer encountered).		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

LOCATION: Eastern Creek - Farm dam 1		Borehole Log: DTP4	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Very stiff, yellow / brown, silty clay, with rootlets.		0.2							No visual or olfactory indications of contamination throughout profile. Large clods of more dense clay material present. Small sections of reworked natural present.
		0.4							
		0.6							
		0.8							
		1.0	—	DTP4-1					
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
NATURAL Firm, light brown / grey, SILTY CLAY, with red mottles (20 %).		2.2							Test pit advanced into side of farm dam levee wall.
		2.4							
End of hole @ 2.4 m (Natural layer encountered).		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

LOCATION: Eastern Creek - Stockpile 1		Borehole Log: STP1	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Stiff, brown, gravelly clay. Gravel is rounded of predominantly river pebbles (reworked natural).		0.2							No visual or olfactory indications of contamination throughout profile.
		0.4							
		0.6							
		0.8							
		1.0	—	STP1-1					
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
NATURAL Very stiff, orange / red CLAY.		2.2	—	STP1-2					Natural layer consistent with base of stockpile.
		2.4							
		2.6							
		2.8							
		3.0							
End of hole @ 2.4m (Natural layer encountered).									

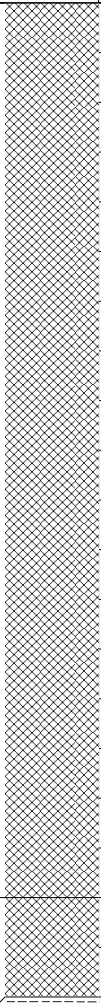
NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog



**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

LOCATION: Eastern Creek		Borehole Log: STP2 - Stockpile 1	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Stiff, brown, gravelly clay. Gravel of subangular, fine - coarse building rubble (blue metal, asphalt, brick, sandstone). Cobbles of asphalt and brick present.		0.2							No visual or olfactory indications of contamination throughout profile.
		0.4							
		0.6	█	STP2-1					
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
FILL Soft, brown gravelly clay. Gravel is fine - coarse, subangular - round of blue metal and river pebbles.		2.0	█	STP2-2					
NATURAL Very stiff, orange / red, CLAY.		2.2						Natural layer consistent with base of stockpile.	
		2.4							
		2.6							
		2.8							
		3.0							
End of hole @ 2.3m (Natural layer encountered).									

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

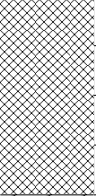
LOCATION: Eastern Creek		Borehole Log: STP3	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Soft, brown, gravelly clay. Gravel is fine - coarse, subangular - rounded, of crushed sandstone and river pebbles.		0.2	—	STP3-2					No visual or olfactory indications of contamination throughout profile.
		0.4							
FILL Very stiff, brown, slightly gravelly clay. Gravel is fine - coarse, angular - subrounded of sandstone, ceramic tile, blue metal. Cobbles of sandstone present. Geofabric, wire and plastic sheeting present.		0.6							
		0.8							
		1.0							
		1.2	—	STP3-1					
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
NATURAL Hard, light brown / grey, mottled CLAY.		2.2							Natural layer consistent with base of stockpile.
		2.4							
		2.6							
End of hole @ 2.5m (Natural layer encountered).		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

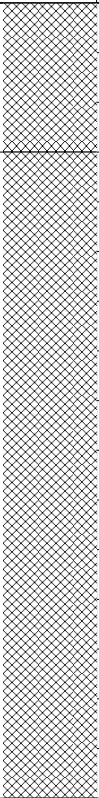
Geological Borelog

LOCATION: Eastern Creek - Area of uncontrolled fill		Borehole Log: STP4	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Stiff, brown / yellow, gravelly clay. Gravel is fine - coarse, rounded river pebbles. Plastic sheeting is present.		0.2	—	STP4-1					No visual or olfactory indications of contamination throughout profile.
NATURAL Loose, light brown / grey, SILTY CLAY.		0.4							Natural layer consistent with base of stockpile.
End of hole @ 0.6m (Natural layer encountered).		0.6							
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

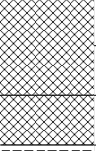
**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Loose, brown, silty, clayey sand with rootlets.		0.0	—	TP1-1					No visual or olfactory indications of contamination throughout profile.
FILL Stiff, brown / yellow mottled, gravelly clay. Gravel is fine - coarse, angular - subangular building rubble (brick, concrete, asphalt, glass). Boulders of shale present.		0.2							
		0.4							
		0.6							
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		NATURAL Loose, brown / grey, SILTY CLAY.							
End of hole @ 2m (Natural layer encountered).	2.0								
	2.2								
	2.4								
	2.6								
	2.8								
	3.0								

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

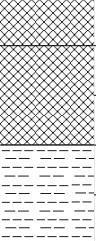
LOCATION: Eastern Creek - Ferrers Road		Borehole Log: TP2	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Loose, light brown, silty, clayey sand, with rootlets.		0.2	—	TP2-1					No visual or olfactory indications of contamination throughout profile.
FILL Firm, grey / black, clay, with asphalt gravels.			—	TP2-2					
NATURAL Very stiff, orange and grey mottled, CLAY.		0.4							
End of hole @ 0.6 m (Natural layer encountered).		0.6							
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

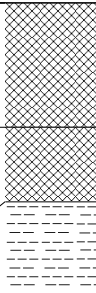
LOCATION: Eastern Creek - Ferrers Road		Borehole Log: TP3	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Soft, brown, silty, sandy clay with rootlets.									No visual or olfactory indications of contamination throughout profile. Tile and brick gravels on nearby surface.
FILL Firm, yellow / grey, clay, with dark grey mottles.		0.2	—	TP3-1					
NATURAL Hard, dark orange, CLAY.		0.4							
End of hole @ 0.5 m (Natural layer encountered).		0.6							
		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

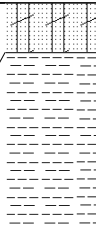
LOCATION: Eastern Creek - Ferrers Road		Borehole Log: TP4	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Loose, brown, sandy, silty clay, with rootlets.		0.2	—	TP4-1					No visual or olfactory indications of contamination throughout profile.
FILL Firm, grey / yellow, clay, with orange mottles.		0.4							
NATURAL Stiff, dark orange, CLAY.		0.6							
End of hole @ 0.6 m (Natural layer encountered).		0.8							
		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

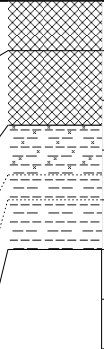
LOCATION: Eastern Creek - Ferrers Road		Borehole Log: TP5	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
NATURAL Loose, brown, SILTY SANDY CLAY, with rootlets. NATURAL Hard, brown-yellow, CLAY.		0.2 0.4	—	TP5-1					No visual or olfactory indications of contamination throughout profile.
End of hole @ 0.45 m (Natural layer encountered).		0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

LOCATION: Eastern Creek - Ferrers Road		Borehole Log: TP6	Logged by: LD
SURFACE ELEVATION:	JOB NUMBER: 118069		
GROUNDWATER: -	DATUM:	PROJECT: Light Horse Junction	Proj. Manager: CN
DRILL METHOD: Excavator	DATE DRILLED: 29/6/18		

STRATIGRAPHY	GRAPHIC LOG	Depth metres	Sample Depth	Moisture Content	PID/FID		pH		Comments
					Background	Reading	pH - soil	pH - water	
FILL Loose, brown, sandy silty clay, with rootlets.									No visual or olfactory indications of contamination throughout profile.
FILL Stiff, brown, clay, with gravels of brick, shell, sandstone and smooth red stones.		0.2	—	TP6-1					
NATURAL Stiff, light brown, SILTY CLAY.		0.4	—	TP6-2					
NATURAL Firm, brown, gravelly CLAY.		0.6							
NATURAL Firm, pale brown, CLAY.		0.8							
End of hole @ 0.5 m (Natural layer encountered).		1.0							
		1.2							
		1.4							
		1.6							
		1.8							
		2.0							
		2.2							
		2.4							
		2.6							
		2.8							
		3.0							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

APPENDIX B – CALIBRATION CERTIFICATES

RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	ppm	100.0 ppm	1846924 C40	☒

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
20/11/2017	100 ppm	100.1 ppm	☒

- ☒ Battery Status 100%
☒ 10 minutes test complete
☒ Spare battery status (Min 5.5 volts)
☒ Electrical Safety Tag attached (AS/NZS 3760)

- ☒ Performance check (pump, lamp, sensor)
☒ Data cleared
☒ Filters checked

Tag No: 000928

Valid to: 30/11/2017

Date: 20/11/2017

Signed: *[Signature]*

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☒	☐	MiniRAE 2000 PID / Operational Check / Battery Status 100%
☒	☐	Lamp 10.6 eV, Compound Set to: Isobutylene C/factor: 1
☒	☐	Protective yellow rubber boot
☒	☐	Inlet probe (attached to PID)
☒	☐	Spare water trap filter(s) Qty 2
☒	☐	Charger 240V to 12V1250mA
☒	☐	Cradle and Travel Charger
☒	☐	Instruction Manual behind foam on the lid of case "
☒	☐	Quick Guide Sheet behind foam on the lid of case "
☒	☐	Spare Alkaline Battery Compartment with batteries
☒	☐	Inline Moisture trap Filter Guide Laminated
☒	☐	Calibration regulator & tubing (optional)
☒	☐	Data cable and Software CD (optional)
☒	☐	Carry Case
☒	☐	Check to confirm electrical safety (tag must be valid)

Date: 20/11/2017

Signed: *[Signature]*

TFS Reference	CS007872	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	PID3000-45	Condition on return:	
Equipment Serial No.	592916963		

"We do more than give you great equipment... We give you great solutions!"

Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@Thermofisher.com	
Melbourne Branch 5 Caribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringara Ave Malaga WA 6090	

APPENDIX C1 – SITE PHOTOGRAPHS WESTERN PORTION



Photo 1 Former Army Compound – UST 1 and 2



Photo 2 Former Army Compound – UST 1



Photo 3 Former Army Compound – TP3 and UST 2



Photo 4 Former Army Compound – TP2



Photo 5 Former Army Compound (Building 2)



Photo 6 Former Army Compound – TP1



Photo 7 Former Army Compound (Building 1)



Photo 8 Asbestos fragments near Building 1 of Former Army Compound



Photo 9 WWTP – Grit Chamber



Photo 10 WWTP Control room, primary sedimentation tank, and distribution pit



Photo 11 WWTP Sand Filter



Photo 12 WWTP Aerobic Treatment Tank with Rock Bed



Photo 13 Soil mound 1 (TP7)



Photo 14 Soil mound 3 (TP9)



Photo 15 Soil mound 4 (TP10)



Photo 16 Piles of soil at the north east of the WWTP



Photo 17 Former incinerator



Photo 18 Pile of rubble (near the dry pond on the east of the site)



Photo 19 WS3 (up stream)



Photo 20 High pressure gas main

APPENDIX C2 - SITE PHOTOGRAPHS EASTERN PORTION

Plate 1 – DTP1 positioned in farm dam 1 wall



Plate 2 – Soil profile from DTP1



Plate 3 – DTP2 positioned in farm dam 1 wall



Plate 4 - Soil profile from DTP2



Plate 5 – DTP3 positioned in farm dam 2 wall



Plate 6 - Soil profile from DTP3



Plate 7 – DTP4 positioned in farm dam 2 wall



Plate 8 - Soil profile from DTP4



Plate 9 – Facing North – Relative locations of stockpiles 2, 3, 4 and 5



Plate 10 – Stockpile 7



Plate 11 – Stockpile 6



Plate 12 – Profile of STP4 dug into area of uncontrolled fill



Plate 13 – Profile of STP1



Plate 14- Profile of STP2



Plate 15 – Profile of STP3



Plate 16 – Profile of TP1 (unable to photograph properly due to depth of pit)



Plate 17 – Profile of TP2



Plate 18 – Profile of TP3



Plate 19 – Profile of TP4



Plate 20- Profile of TP5





APPENDIX D – DESKTOP SEARCHES

NSW Office of Water

Work Summary

GW104061

Licence: 10BL160233

Licence Status: ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date:
Completion Date: 22/08/2001

Final Depth: 24.50 m
Drilled Depth: 24.50 m

Contractor Name: INTERTEC DRILLING
SERVICES
Driller: William Crump
Assistant Driller:

Property: THE AUSTRAL BRICKS 780
WALLGROVE RD HORSLEY
PARK 2175 NSW
GWMA: -
GW Zone: -

Standing Water
Level:
Salinity:
Yield:

Site Details

Site Chosen
By:

County
Form A: CUMBE
Licensed: CUMBERLAND
Parish
CUMBE.032
MELVILLE
Cadastre
LT 1 DP 206617
Whole Lot
7//1059698

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Unknown
Source:

Northing: 6255566.0
Easting: 301820.0

Latitude: 33°49'17.7"S
Longitude: 150°51'31.1"E

GS Map: -

MGA Zone: 0

Coordinate Unknown
Source:

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.30	159			Rotary Air
1		Hole	Hole	5.30	24.50	114			Down Hole Hammer
1		Annulus	Waterworn/Rounded	4.50	24.50				Graded

1	1	Casing	Pvc Class 18	-0.10	8.50	60			Screwed
1	1	Casing	P.V.C.	0.00	5.30	140	130		Seated on Bottom
1	1	Opening	Screen	8.50	23.50	60		1	PVC Class 18, Screwed, A: 0.50mm
1	1	Casing	P.V.C.	23.50	24.50	60	50		Seated on Bottom, Screwed

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
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Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	FILL	Fill	
0.50	1.00	0.50	TOPSOIL	Topsoil	
1.00	6.00	5.00	WEATHERED SILTSTONE	Siltstone	
6.00	24.50	18.50	GREY SHALE	Shale	

Remarks

22/08/2001: Form A Remarks:
GRAVEL PACK: QUANTITY: 160 LITRES

*** End of GW104061 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Applicant Details

Your reference 118069 - WSPT

ENVIRONMENTAL EARTH SCIENCES NSW
82-84 DICKSON AVE
ARTARMON NSW 2064

Certificate Details

Certificate no.	PL2018/05779	Fee: \$133.00
Date issued	06 July 2018	Urgency fee: N/A
Receipt no.	ePay Ref 8482	

Property information

Property ID	380172	Land ID	306240
Legal description	LOT 5 DP 804051		
Address	EASTERN CREEK PARK FERRERS ROAD EASTERN CREEK NSW 2766		
County	CUMBERLAND	Parish	PROSPECT

PLANNING CERTIFICATE (Section 10.7(2 & 5))

Blacktown City Council prepared this Planning Certificate under Section 10.7 of the *Environmental Planning and Assessment Act 1979*. The form and content of the Certificate is consistent with *Environmental Planning and Assessment Regulation 2000*.

Disclaimer

Blacktown City Council gives notice and points out to all users of the information supplied herein, that the information herein has been compiled by Council from sources outside of Council's control. While the information herein is provided with all due care and in good faith, it is provided on the basis that Council will not accept any responsibility for and will not be liable for its contents or for any consequence arising from its use, and every user of such information is advised to make all necessary enquiries from the appropriate organisations, institutions and the like.

Blacktown City Council also gives notice to all users of the information supplied herein, wherever any particular enquiry herein remains unanswered or has not been elaborated upon, such silence should not be interpreted as meaning or inferring either a negative or a positive response as the case may be.

Council Chambers • 62 Flushcombe Road • Blacktown NSW 2148
Telephone: (02) 9839 6000 • **Facsimile:** (02) 9831-1961 • DX 8117 Blacktown
Email: 149certificates@blacktown.nsw.gov.au • **Website:** www.blacktown.nsw.gov.au
All correspondence to: The General Manager • PO Box 63 • Blacktown NSW 2148

Section 10.7(2)

The following information is provided under Section 10.7(2) of the *Environmental Planning and Assessment Act 1979*. The information relates to the subject land at the date of this Certificate.

1. Names of relevant planning instruments and development control plans

1.1 Environmental Planning Instrument

As at the date of this certificate the abovementioned land is not affected by Blacktown Local Environmental Plan 2015.

The land is affected by the *State Environmental Planning Policy (Western Sydney Parklands) 2009*.

1.2 Proposed Local Environmental Plans

Not applicable.

1.3 Other Applicable State Environmental Planning Policies

Attachment 1 contains a list of State Environmental Planning Policies that may apply to the carrying out of development on the subject land.

1.4 Proposed State Environmental Planning Policies

Council is not aware of any proposed State Environmental Planning Policy that is or has been the subject of community consultation or on public exhibition under the Act, applying to the subject land.

1.5 Development control plans

Blacktown Development Control Plan 2015 applies to the subject land.

2. Zoning and land use under relevant environmental planning instruments

The following information will assist in determining how the subject land may be developed. It is recommended that you read this section in conjunction with a full copy of any relevant environmental planning instrument as there may be additional provisions that affect how the land may be developed.

2.1 Zoning

Under *State Environmental Planning Policy (Western Sydney Parklands) 2009*, the land is zoned:

Unzoned

2.2 Minimum land dimensions for the erection of a dwelling house

Not applicable

2.3 Critical habitat

The land does not include or comprise a critical habitat.

Note: Critical habitat registers are kept by the National Parks and Wildlife Service under the *Threatened Species Conservation Act 1995* and the Department of Fisheries under the *Fisheries Management Act 1994*.

2.4 Conservation areas

The land is not within a conservation area.

2.5 Environmental Heritage

The land does not contain an item of environmental heritage under the protection of State Environmental Planning Policy (Western Sydney Parklands) 2009

3. Complying development

Complying development may or may not be carried out on the subject land under an Environmental Planning Policy. Council does not have sufficient information to determine the extent to which specific complying development may or may not be carried out.

4. Coastal protection

The subject land is not affected by the operation of Sections 38 or 39 of the *Coastal Protection Act, 1979*.

5. Mine subsidence

The subject land has not been proclaimed to be a mine subsidence district within the meaning of Section 15 of the *Mine Subsidence Compensation Act 1961*.

6. Road widening and road realignment

The subject land is not affected by road widening or road realignment under an environmental planning instrument.

7. Council and other public authority policies on hazard risk restrictions

7.1 Contaminated Lands Policy and Asbestos Policy Schedule 6

Council has adopted a Contaminated Lands Policy and an Asbestos Policy which may restrict development on the subject land.

The Land Contamination Policy applies when zoning or land use changes are proposed on land which has previously been used for certain purposes or has the potential to be affected by such purposes undertaken on nearby lands. The Asbestos Policy applies where land contains, or is likely to have contained in the past, buildings or structures that were erected prior to the banning of asbestos. Both policies should be considered in the context of relevant State legislation and guidelines.

Council's records may not be sufficient to determine all previous uses on the land, or determine activities that may have taken place on this land.

7.2 Other policies on hazard risk restrictions

Council has not adopted any other policies to restrict the development of the subject land by reason of the likelihood of landslip, bushfire, tidal inundation, subsidence or the occurrence of acid sulphate soils.

Note: Although Council has not adopted a specific policy to restrict development bushfire prone land, it is bound by state-wide bushfire legislation that may restrict development on the subject land. Additional information relating to bushfire prone land is provided at point 11 below.

7a. Flood related development controls information

Council has adopted a Floodplain Management Policy which may restrict the development of the land subject to this Certificate, including development for the purposes of dwelling houses, dual occupancies, multi-dwelling housing, residential flat buildings and any other purpose that requires the placement or erection of any structure on the land. The Flood Risk Precinct Maps prepared under the policy are based on the results of Engineering Flood Studies commissioned by Government Authorities and Council. These maps indicate that the land subject to this Certificate lies partly or wholly within the Medium Flood Risk Precinct. The term Medium Flood Risk Precinct is defined as land below the 100-year flood level that is not within a High Flood Risk Precinct. This is land that is not subject to a high hydraulic

hazard or where there are no significant evacuation difficulties. Further details are provided in the NSW Government's Floodplain Development Manual and are available from Council. Council does not warrant that the information provided or made available to you is complete. Council strongly recommends that, in all cases, you seek independent professional advice to supplement your enquiries.

Council has adopted a Floodplain Management Policy which may restrict the development of the land subject to this Certificate, including development for the purposes of dwelling houses, dual occupancies, multi-dwelling housing, residential flat buildings and any other purpose that requires the placement or erection of any structure on the land. The Flood Risk Precinct Maps prepared under the policy are based on the results of Engineering Flood Studies commissioned by Government Authorities and Council. These maps indicate that the land subject to this Certificate lies partly or wholly within the High Flood Risk Precinct. The term High Flood Risk Precinct is defined as the area of land below the 100-year flood event that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. Further details are provided in the NSW Government's Floodplain Development Manual and are available from Council. Council does not warrant that the information provided or made available to you is complete. Council strongly recommends that, in all cases, you seek independent professional advice to supplement your enquiries.

8. Land reserved for acquisition

State Environmental Planning Policy (Western Sydney Parklands) 2009 makes provision for land included on the Land Reservation Acquisition Map to be acquired by a public authority.

9. Contributions plans

Council currently levies contributions under Section 7.11 of the *Environmental Planning & Assessment Act 1979* for facilities and services. The further development of the subject land may incur such contributions.

9a. Biodiversity certified land

The land is not biodiversity certified land as defined by Part 7AA of the *Threatened Species Conservation Act 1995*.

10. Biobanking agreements

The land is not subject to any biobanking agreement under Part 7A of the *Threatened Species Conservation Act 1995*.

11. Bushfire prone land

The Rural Fires and Environmental Assessment Legislation Amendment Act 2002, which came into force on 1 August 2002, introduced development provisions for bush fire prone land as shown on a Bush Fire Prone Land Map. "Bush fire prone land" is land that has been designated by the Commissioner of the NSW Rural Fire Service as being bush fire prone due

to characteristics of vegetation and topography. The land the subject of this certificate has been identified on Council's Bush Fire Prone Land Map as being:

Bushfire - 30m buffer
Vegetation Category 2

On land that is bush fire prone, certain development may require further consideration under Section 4.14 or Section 4.46 of the *Environmental Planning & Assessment Act 1979* and under Section 100B of the *Rural Fires Act 1997*.

12. Property vegetation plans

The subject land is not affected by a property vegetation plan under the *Native Vegetation Act 2003*. The Blacktown local government area is excluded from the operation of the *Native Vegetation Act 2003* (refer Schedule 1 Part 3 of that Act).

13. Orders under *Trees (Disputes Between Neighbours) Act 2006*

No. Council has not been notified of any order made under the *Trees (Disputes Between Neighbours) Act 2006* in relation to the subject land.

14. Site compatibility certificates and conditions for seniors housing

Land to which this Certificate applies is not subject to the above.

15. Site compatibility certificates for infrastructure

Land to which this Certificate applies is not subject to the above.

16. Site compatibility certificates and conditions for affordable rental housing

Land to which this Certificate applies is not subject to the above.

17. Paper subdivision information

Not applicable

18. Site verification certificates

Council is not aware of any site verification certificate applying to the subject land.

Under the *Contaminated Land Management Act 1997* and *Contaminated Land Management Amendment Act 2008*

- (a) The land to which this certificate relates has not been declared to be significantly contaminated land at the date when the certificate was issued

- (b) The land to which the certificate relates is not subject to a management order at the date when the certificate was issued
- (c) The land to which this certificate relates is not the subject of an approved voluntary management proposal at the date when the certificate was issued
- (d) The land to which this certificate relates is not subject to an ongoing maintenance order as at the date when the certificate was issued
- (e) The land to which this certificate relates is not the subject of a site audit statement provided to the Council.

19. Affected building notices and building product rectification orders

19.1 Affected building notices

Council is not aware of any affected building notice in force for the subject land.

19.2 Building product rectification orders

- (a) Council is not aware of any building product rectification order in force for the subject land.
- (b) Council is not aware of any notice of intention to make a building product rectification order being given for the subject land.

Section 10.7(5)

The following information is provided under Section 10.7(5) of the *Environmental Planning & Assessment Act 1979*. As per section 10.7(6) of the Act, Council shall not incur any liability in respect of any advice provided in good faith under section 10.7(5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this Certificate.

Planning Instruments and Covenants

The provisions of any covenant, agreement or instrument applying to this land that restrict or prohibit certain development may be inconsistent with the provisions of an environmental planning instrument. In such cases, the provisions of any such covenant, agreement or instrument may be overridden.

Loose-filled Asbestos Insulation

Some residential homes located in the Blacktown Local Government Area may potentially contain loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information

Biodiversity and Threatened Species Conservation

The land is affected by a tree preservation control under Clause 5.9 of the Blacktown Local Environmental Plan 2015. A person shall not ringbark, cut down, lop, top, remove, injure or wilfully destroy any tree, or cause any tree to be ringbarked, cut down, topped, lopped, injured or wilfully destroyed, except with the consent of the Council.

The provisions of any covenant, agreement or instrument applying to this land purporting to restrict or prohibit certain development may be inconsistent with the provisions of a Regional Environmental Plan, State Environmental Planning Policy or Blacktown Local Environmental Plan 2015, in which case the provisions of any such covenant, agreement or instrument may be overridden.

The *Threatened Species Conservation Act 1995* provides for the conservation of threatened species, populations and ecological communities of animals and plants.

The *Threatened Species Conservation Act 1995* amended the *Environmental Planning and Assessment Act 1979* to require, amongst other things, that:

- (a) A critical habitat (as defined in the *Threatened Species Conservation Act 1995*) be identified in environmental planning instruments, and
- (b) Consent authorities and determining authorities must, when considering proposed development or an activity, assess whether it is likely to significantly affect threatened species, populations and ecological communities, or their habitats, and, if a significant effect is likely, to require the preparation of a species impact statement in accordance with the requirements of the *Threatened Species Conservation Act 1995*, and
- (c) Consent authorities and determining authorities must, when considering proposed development or an activity, have regard to the relevant recovery plans and threat abatement plans.

The *Environment Protection and Biodiversity Conservation Act 1999* provides protection for items of national significance. Items of national environmental significance include nationally threatened animal and plant species and ecological communities.

The Act requires a separate Commonwealth approval to be obtained where an action is likely to have significant impacts on items of national environmental significance.

For further information on this matter, please contact the Australian Government's Department of the Environment.

This land may contain an Aboriginal archaeological site under the protection of the National Parks and Wildlife Service Act, 1974. Before any development can proceed in an area known to contain Aboriginal archaeological sites, a consent to destroy must be obtained from the Director of the National Parks and Wildlife Service.

Attachment 1 – State Environmental Planning Policies

In addition to the principal environmental planning instrument identified in section 2.1 of this Certificate, the following State Environmental Planning Policies may also affect development on the subject land.

SEPP (Affordable Rental Housing) 2009

Establishes a consistent planning regime for the provision of affordable rental housing. The policy provides incentives for new affordable rental housing, facilitates the retention of existing affordable rentals, and expands the role of not-for-profit providers. It also aims to support local centres by providing housing for workers close to places of work, and facilitate development of housing for the homeless and other disadvantaged people.

SEPP Building Sustainability Index (BASIX) 2004

This SEPP operates in conjunction with *Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004* to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX. The draft SEPP was exhibited together with draft *Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004*.

SEPP (Exempt and Complying Development Codes) 2008

This policy provides exempt and complying development codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that are of minimal environmental impact that may be carried out without the need for development consent and, in the General Housing Code, types of complying development that may be carried out in accordance with a complying development certificate as defined in the *Environmental Planning and Assessment Act 1979*.

SEPP (Sydney Region Growth Centres) 2006

This policy provides for the coordinated release of land for residential, employment and other urban development in Sydney's North West and South West Growth Centres, in conjunction with the precinct planning provisions contained in the *Environmental Planning and Assessment Regulation 2000*.

SEPP (Housing for Seniors and People with a Disability) 2004

This policy encourages the development of high quality accommodation for the state's ageing population and for people who have disabilities, whilst ensuring development is in keeping with the local neighbourhood. Note the name of this policy was changed from *State Environmental Planning Policy (Seniors Living) 2004* to *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*, effective 12.10.07.

SEPP (Infrastructure) 2007

The aim of this policy is to facilitate the orderly and economic use and development of rural

lands for rural and related purposes. This SEPP Provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

SEPP (Miscellaneous Consent Provisions) 2007

This SEPP contains provisions for temporary structures, subdivision, the demolition of a building or work, certain change of use and fire alarm link communication works.

SEPP (State Significant Precincts) 2005

The purpose of this Policy is to facilitate the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant precincts for the benefit of the State. It also aims to facilitate service delivery outcomes for a range of public services and to provide for the development of major sites for a public purpose or redevelopment of major sites no longer appropriate or suitable for public purposes.

SEPP (Mining, Petroleum, Production and Extractive Industries) 2007

This Policy aims to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of the State. The Policy establishes appropriate planning controls to encourage ecologically sustainable development.

SEPP No. 1 - Development Standards

Makes development standards more flexible. It allows councils to approve a development proposal that does not comply with a set standard where this can be shown to be unreasonable or unnecessary.

SEPP No. 19 - Bushland in Urban Areas

Protects and preserves bushland within certain urban areas, as part of the natural heritage or for recreational, educational and scientific purposes. The policy is designed to protect bushland in public open space zones and reservations, and to ensure that bush preservation is given a high priority when local environmental plans for urban development are prepared.

SEPP No. 21 - Caravan Parks

Ensures that where caravan parks or camping grounds are permitted under an environmental planning instrument, movable dwellings, as defined in the *Local Government Act 1993*, are also permitted. The specific kinds of movable dwellings allowed under the Local Government Act in caravan parks and camping grounds are subject to the provisions of the Caravan Parks Regulation. The policy ensures that development consent is required for new caravan parks and camping grounds and for additional long-term sites in existing caravan parks. It also enables, with the council's consent, long-term sites in caravan parks to be subdivided by leases of up to 20 years.

SEPP No. 30 - Intensive Agriculture

Requires development consent for cattle feedlots having a capacity of 50 or more cattle or piggeries having a capacity of 200 or more pigs. The policy sets out information and public notification requirements to ensure there are effective planning control over this export-driven rural industry. The policy does not alter if, and where, such development is permitted, or the functions of the consent authority.

SEPP No. 32 - Urban Consolidation

States the Government's intention to ensure that urban consolidation objectives are met in all urban areas throughout the State. The policy focuses on the redevelopment of urban land that is no longer required for the purpose it is currently zoned or used, and encourages local councils to pursue their own urban consolidation strategies to help implement the aims and objectives of the policy. Councils will continue to be responsible for the majority of rezonings. The policy sets out guidelines for the Minister to follow when considering whether to initiate a regional environmental plan (REP) to make particular sites available for consolidated urban redevelopment. Where a site is rezoned by an REP, the Minister will be the consent authority.

SEPP No. 33 - Hazardous and Offensive Development

Provides new definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment'. The definitions apply to all planning instruments, existing and future. The new definitions enable decisions to approve or refuse a development to be based on the merit of proposal. The consent authority must carefully consider the specifics of the case, the location and the way in which the proposed activity is to be carried out. The policy also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy. For example, any application to carry out a potentially hazardous or potentially offensive development is to be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a preliminary hazard analysis (PHA). The policy does not change the role of councils as consent authorities, land zoning, or the designated development provisions of the Environmental Planning and Assessment Act 1979.

SEPP No. 55 - Remediation of Land

Introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals. To assist councils and developers, the Department, in conjunction with the Environment Protection Authority, has prepared Managing Land Contamination: Planning Guidelines.

SEPP No. 62 - Sustainable Aquaculture

Encourages the sustainable expansion of the industry in NSW. The policy implements the regional strategies already developed by creating a simple approach to identify and

categorise aquaculture development on the basis of its potential environmental impact. The SEPP also identifies aquaculture development as a designated development only where there are potential environmental risks.

SEPP No. 64 - Advertising and Signage

Aims to ensure that outdoor advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable locations and is of high quality design and finish. The SEPP was amended in August 2007 to permit and regulate outdoor advertising in transport corridors (e.g. freeways, tollways and rail corridors). The amended SEPP also aims to ensure that public benefits may be derived from advertising along and adjacent to transport corridors. Transport Corridor Outdoor Advertising and Signage Guidelines (DOP July 2007) provides information on design criteria, road safety and public benefit requirements for SEPP 64 development applications.

SEPP No. 65 - Design Quality of Residential Apartment Development

Raises the design quality of residential flat development across the state through the application of a series of design principles. Provides for the establishment of Design Review Panels to provide independent expert advice to councils on the merit of residential flat development. The accompanying regulation requires the involvement of a qualified designer throughout the design, approval and construction stages.

SREP No. 30 - St Marys

Sydney Regional Environmental Plan 30 - St Marys (SREP 30) provides a statutory framework to plan and develop 1538 hectares of land known as the Australian Defence Industries (ADI) site at St Marys. The plan zones the land for particular types of development: urban, regional park, regional open space, drainage, road/road widening, and employment.

SEPP (Western Sydney Employment Area) 2009

This State Environmental Planning Policy promotes economic development and the creation of employment in the Western Sydney Employment Area by providing for development, including major warehousing, distribution, freight transport, industrial, high technology and research facilities. The policy provides for coordinated planning, development and rezoning of land for employment or environmental conservation purposes. This State Environmental Planning Policy promotes economic development and the creation of employment in the Western Sydney Employment Area by providing for development, including major warehousing, distribution, freight transport, industrial, high technology and research facilities. The policy provides for coordinated planning, development and rezoning of land for employment or environmental conservation purposes.

SEPP (Western Sydney Parklands) 2009

The aim of the policy is to put in place planning controls that will enable the Western Sydney Parklands Trust to develop the Western Parklands into multi-use urban parkland for the region of western Sydney.

SEPP (Western Sydney Recreation Area)

This policy enables development to be carried out for recreational, sporting and cultural purposes within the Western Sydney Recreation Area, including the development of a recreation area of state significance.

Authorised by Blacktown City Council
Proforma ID: 506361

End of Certificate



SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252

Customer Experience 13 10 50

ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D18/154264

13 July 2018

Ms Natalie Elderidge
ENVIRONMENTAL EARTH SCIENCES
82-84 Dickson Avenue
ARTARMON NSW 2064

Dear Ms Elderidge

RE SITE: 475 Ferrers Road, EASTERN CREEK NSW 2766

I refer to your site search request received by SafeWork NSW on 4 July 2018 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

APPENDIX E1 – RESULTS SUMMARY TABLES WESTERN PORTION

				Field_ID	DP1 3.8-4.0	TP1 0.1-0.2	TP1 2.0-2.2	TP2 0.8-1.0	FD1	TP2 4.0-4.2	TP3 1.2-1.3	TP4 0-0.2	TP6 0.2-0.3	TP7 0.1-0.2
				LocCode	DP1	TP1	TP1	TP2	TP2	TP2	TP3	TP4	TP6	TP7
				Sample_Depth_Range	3.8-4	0.1-0.2	2-2.2	0.8-1		4-4.2	1.2-1.3	0-0.2	0.2-0.3	0.1-0.2
				Sampled_Date-Time	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017
				Matrix_Description										
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
Asbestos Classification and Quantitation per NEPM	Weight Used for % Calculation	kg	0.0001											
	Asbestos (Fines and Fibrous <7mm)	g	0.0004											
	Asbestos (Fines and Fibrous FA+AF)	% (w/w)	0.001											
	Asbestos Containing Material	g	0.1											
	Asbestos Containing Material (as 15% Asbestos in A	% (w/w)	0.01											
	Fibrous Asbestos >7mm	g	0.0004											
Asbestos Identification in Bulk Solids	Asbestos Type	-												
	Asbestos Detected													
	APPROVED IDENTIFIER:	--												
	Unknown Mineral Fibre Detected	g/kg	0.1											
Asbestos Identification in Soils	Asbestos Type	-												
	Asbestos Detected													
	Asbestos (Trace)	Fibres	5											
	APPROVED IDENTIFIER:	--												
Moisture Content	Moisture Content	%	1											
PAH/Phenols (SIM)	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5											
	Benzo(b+)fluoranthene	mg/kg	0.5											
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5											
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5											
	Acenaphthene	mg/kg	0.5											
	Acenaphthylene	mg/kg	0.5											
	Anthracene	mg/kg	0.5											
	Benzo(a)anthracene	mg/kg	0.5											
	Benzo(a)pyrene	mg/kg	0.5					0.7		0.8	3.2			
	Benzo(ghi)perylene	mg/kg	0.5											
	Benzo(k)fluoranthene	mg/kg	0.5											
	Chrysene	mg/kg	0.5											
	Dibenzo(a,h)anthracene	mg/kg	0.5											
	Fluoranthene	mg/kg	0.5											
	Fluorene	mg/kg	0.5											
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5											
	Naphthalene (Ex SVOC)	mg/kg	0.5											
	PAHs (Sum of total)	mg/kg	0.5	4000										
	Phenanthrene	mg/kg	0.5											
	Pyrene	mg/kg	0.5											
	Total PAH (NSW Waste 2014)	mg/kg							200	800				
	Carcinogenic PAHs as B(a)P TPE	mg/kg												
	Mercury	mg/kg	0.1	40										
Total Mercury by FIMS	Mercury	mg/kg		730										
Total Metals by ICP-AES	Arsenic	mg/kg	5	3000				160		100	400			
	Cadmium	mg/kg	1	900						20	80			
	Chromium (III+VI)	mg/kg	2					320						
	Copper	mg/kg	5	240000				85						
	Lead	mg/kg	5	1500				1800		100	400			
	Nickel	mg/kg	2	6000				60		40	160			114
	Zinc	mg/kg	5	400000				330						51
TRH - Semivolatile Fraction	C10-C16	mg/kg	50						1000					
	C16-C34	mg/kg	100					2500	3500					
	C34-C40	mg/kg	100					6600	10000					
	F2-NAPHTHALENE	mg/kg	50		NL	NL	NL	170						
	C10 - C14	mg/kg	50											
	C15 - C28	mg/kg	100											
	C29-C36	mg/kg	100											
	+C10 - C36 (Sum of total)	mg/kg	50						10000	40000				
	C10 - C40 (Sum of total)	mg/kg	50											
TRH - Semivolatile Fraction (Silica Gel Clean Up)	TPH C10-C14 Fraction after Silica Cleanup	mg/kg	50											
	TPH C15-C28 Fraction after Silica Cleanup	mg/kg	100											
	TPH C29-C36 Fraction after Silica Cleanup	mg/kg	100											
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50											
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100											
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100											
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50											
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50											
	>C10 - C40 Fraction (sum) (SG)	mg/kg	50											
TRH Volatiles/BTEX	Benzene	mg/kg	0.2		4	6	9	20	95	10	40			
	Ethylbenzene	mg/kg	0.5		NL	NL	NL	NL	185	600	2400			
	Naphthalene	mg/kg	1		NL	NL	NL	NL	370					
	Toluene	mg/kg	0.5		NL	NL	NL	NL	135	288	1152			
	C6 - C9	mg/kg	10							650	2600			
	Total BTEX	mg/kg	0.2											
	Xylene (m & p)	mg/kg	0.5											

[illegible]

				Field_ID	TP8 0.8-1.0	TP9 0.1-0.3	TP11 0.1-0.3	TP11 0.5-0.7	TP12 0-0.2	TP13 0.1-0.2	TP14 0-0.2	TP15 0.1-0.2	TP16 0.2-0.3	TP18 0-0.1
				LocCode	TP8	TP9	TP11	TP11	TP12	TP13	TP14	TP15	TP16	TP18
				Sample_Depth_Range	0.8-1	0.1-0.3	0.1-0.3	0.5-0.7	0-0.2	0.1-0.2	0-0.2	0.1-0.2	0.2-0.3	0-0.1
				Sampled_Date-Time	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017
				Matrix_Description										
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
Asbestos Classification and Quantitation per NEPM	Weight Used for % Calculation	kg	0.0001							-	-	-	-	-
	Asbestos (Fines and Fibrous <7mm)	g	0.0004							-	-	-	-	-
	Asbestos (Fines and Fibrous FA+AF)	% (w/w)	0.001							-	-	-	-	-
	Asbestos Containing Material	g	0.1							-	-	-	-	-
	Asbestos Containing Material (as 15% Asbestos in A	% (w/w)	0.01							-	-	-	-	-
	Fibrous Asbestos >7mm	g	0.0004							-	-	-	-	-
Asbestos Identification in Bulk Solids	Asbestos Type	-								-	-	-	-	-
	Asbestos Detected									-	-	-	-	-
	APPROVED IDENTIFIER:	--								-	-	-	-	-
	Unknown Mineral Fibre Detected	g/kg	0.1							-	-	-	-	-
Asbestos Identification in Soils	Asbestos Type	-								NA	NA	NA	-	NA
	Asbestos Detected									No	No	No	-	No
	Asbestos (Trace)	Fibres	5							No	No	No	-	No
	APPROVED IDENTIFIER:	--								S.SPOONER	S.SPOONER	S.SPOONER	-	S.SPOONER
Moisture Content	Moisture Content	%	1							10.5	5.6	6.2	7.6	42.4
PAH/Phenols (SIM)	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5							1.2	3.4	2	1.2	1.2
	Benzo(b+)fluoranthene	mg/kg	0.5							<0.5	2.2	1.2	<0.5	<0.5
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5							0.6	3.1	1.8	0.8	0.6
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5							<0.5	2.8	1.5	0.5	<0.5
	Acenaphthene	mg/kg	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
	Anthracene	mg/kg	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a)anthracene	mg/kg	0.5							<0.5	1.4	0.9	<0.5	<0.5
	Benzo(a)pyrene	mg/kg	0.5					0.7		<0.5	2.3	1.2	0.5	<0.5
	Benzo(ghi)perylene	mg/kg	0.5							<0.5	1.3	0.7	<0.5	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5							<0.5	0.7	<0.5	<0.5	<0.5
	Chrysene	mg/kg	0.5							<0.5	1.5	0.9	<0.5	<0.5
	Dibenzo(a,h)anthracene	mg/kg	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
	Fluoranthene	mg/kg	0.5							0.6	3.2	2	1.1	<0.5
	Fluorene	mg/kg	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5							<0.5	1	0.5	<0.5	<0.5
	Naphthalene (Ex SVOC)	mg/kg	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
	PAHs (Sum of total)	mg/kg	0.5	4000						1.3	18.7	10.8	3.3	<0.5
	Phenanthrene	mg/kg	0.5							<0.5	1.5	1.1	0.6	<0.5
	Pyrene	mg/kg	0.5							0.7	3.6	2.3	1.1	<0.5
	Total PAH (NSW Waste 2014)	mg/kg							200	4.8	18.25	11.6	6.3	<8
	Carcinogenic PAHs as B(a)P TPE	mg/kg								<1.16	2.888	1.631	0.83	<1.16
	Mercury	mg/kg	0.1	40						<0.1	<0.1	<0.1	0.4	<0.1
	Mercury	mg/kg		730						<0.1	<0.1	<0.1	0.4	<0.1
ESDAT Combined Compounds	Arsenic	mg/kg	5	3000				160		<5	<5	<5	6	54
	Cadmium	mg/kg	1	900						<1	<1	<1	<1	3
	Chromium (III+VI)	mg/kg	2					320		25	42	56	38	28
	Copper	mg/kg	5	240000				85		28	24	33	32	158
	Lead	mg/kg	5	1500				1800		16	20	22	22	368
	Nickel	mg/kg	2	6000				60		20	40	46	36	25
	Zinc	mg/kg	5	400000				330		47	46	57	56	2590
	Zinc	mg/kg								47	46	57	56	2590
TRH - Semivolatle Fraction	C10-C16	mg/kg	50						1000	<50	<50	<50	<50	<50
	C16-C34	mg/kg	100					2500	3500	<100	150	<100	<100	<100
	C34-C40	mg/kg	100					6600	10000	<100	110	<100	<100	<100
	F2-NAPHTHALENE	mg/kg	50		NL	NL	NL	170		<50	<50	<50	<50	<50
	C10 - C14	mg/kg	50							<50	<50	<50	<50	<50
	C15 - C28	mg/kg	100							<100	<100	<100	<100	<100
	C29-C36	mg/kg	100							<100	120	<100	<100	<100
	+C10 - C36 (Sum of total)	mg/kg	50						10000	<50	120	<50	<50	<50
	C10 - C40 (Sum of total)	mg/kg	50							<50	260	<50	<50	<50
	C10 - C40 (Sum of total)	mg/kg								<50	260	<50	<50	<50
TRH - Semivolatle Fraction (Silica Gel Clean Up)	TPH C10-C14 Fraction after Silica Cleanup	mg/kg	50							-	-	-	<50	-
	TPH C15-C28 Fraction after Silica Cleanup	mg/kg	100							-	-	-	<100	-
	TPH C29-C36 Fraction after Silica Cleanup	mg/kg	100							-	-	-	400	-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50							-	-	-	<100	-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100							-	-	-	<50	-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100							-	-	-	450	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50							-	-	-	<100	-
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50							-	-	-	400	-
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50							-	-	-	<50	-
	>C10 - C40 Fraction (sum) (SG)	mg/kg	50							-	-	-	<50	-
TRH Volatiles/BTEX	Benzene	mg/kg	0.2		4	6	9	20	95	<0.2	<0.2	<0.2	<0.2	<0.2
	Ethylbenzene	mg/kg	0.5		NL	NL	NL	NL	185	<0.5	<0.5	<0.5	<0.5	<0.5
	Naphthalene	mg/kg	1		NL	NL	NL	NL	370	<1	<1	<1	<1	<1
	Toluene	mg/kg	0.5		NL	NL	NL	NL	135	<0.5	<0.5	<0.5	<0.5	<0.5
	C6 - C9	mg/kg	10							<10	<10	<10	<10	<10
	Total BTEX	mg/kg	0.2							<0.2	<0.2	<0.2	<0.2	<0.2
	Xylene (m & p)	mg/kg	0.5							<0.5	<0.5	<0.5	<0.5	<0.5



				Field_ID										LocCode									
				Sample_Depth_Range										Sampled_Date-Time									
				Matrix_Description																			
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil										NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay									
				NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil										EILs derived according to NEPM 2013									
				NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil										NSW 2014 General Solid Waste CT1 (No Leaching)									
				NSW 2014 Restricted Solid Waste CT2 (No Leaching)																			
Method_Type	ChemName	Units	EQL		0-1m	1-2m	2-4m	>4m	0-2m	0-2m													
	Xylene (o)	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Total	mg/kg	0.5		NL	NL	NL	NL	95				1000	4000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	C6-C10 less BTEX (F1)	mg/kg	10		310	480	NL	NL	215					<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	C6-C10	mg/kg	10								800			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

				Field_ID	TP19 0.2-0.4	TP20 0.1-0.3	TP21 0.1-0.3	TP21 0.8-0.9	TP21 1.4-1.5	TP22 0.2-0.3	FD2	TP23 0.2-0.3	TP23 1.0-1.2	TP24 0.2-0.4
				LocCode	TP19	TP20	TP21	TP21	TP21	TP22	TP22	TP23	TP23	TP24
				Sample_Depth_Range	0.2-0.4	0.1-0.3	0.1-0.3	0.8-0.9	1.4-1.5	0.2-0.3		0.2-0.3	1-1.2	0.2-0.4
				Sampled_Date-Time	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017
				Matrix_Description										
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
Asbestos Classification and Quantitation per NEPM	Weight Used for % Calculation	kg	0.0001											
	Asbestos (Fines and Fibrous <7mm)	g	0.0004											
	Asbestos (Fines and Fibrous FA+AF)	% (w/w)	0.001											
	Asbestos Containing Material	g	0.1											
	Asbestos Containing Material (as 15% Asbestos in A	% (w/w)	0.01											
	Fibrous Asbestos >7mm	g	0.0004											
Asbestos Identification in Bulk Solids	Asbestos Type	-												
	Asbestos Detected													
	APPROVED IDENTIFIER:	--												
	Unknown Mineral Fibre Detected	g/kg	0.1											
Asbestos Identification in Soils	Asbestos Type	-												
	Asbestos Detected													
	Asbestos (Trace)	Fibres	5											
	APPROVED IDENTIFIER:	--												
Moisture Content	Moisture Content	%	1											
PAH/Phenols (SIM)	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5											
	Benzo(b+j)fluoranthene	mg/kg	0.5											
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5											
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5											
	Acenaphthene	mg/kg	0.5											
	Acenaphthylene	mg/kg	0.5											
	Anthracene	mg/kg	0.5											
	Benzo(a)anthracene	mg/kg	0.5											
	Benzo(a)pyrene	mg/kg	0.5					0.7						
	Benzo(ghi)perylene	mg/kg	0.5						0.8	3.2				
	Benzo(k)fluoranthene	mg/kg	0.5											
	Chrysene	mg/kg	0.5											
	Dibenzo(a,h)anthracene	mg/kg	0.5											
	Fluoranthene	mg/kg	0.5											
	Fluorene	mg/kg	0.5											
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5											
	Naphthalene (Ex SVOC)	mg/kg	0.5											
	PAHs (Sum of total)	mg/kg	0.5	4000										
	Phenanthrene	mg/kg	0.5											
	Pyrene	mg/kg	0.5											
	Total PAH (NSW Waste 2014)	mg/kg							200	800				
	Carcinogenic PAHs as B(a)P TPE	mg/kg		40										
	Mercury	mg/kg	0.1	730					4	16				
Total Mercury by FIMS														
Total Metals by ICP-AES	Arsenic	mg/kg	5	3000				160	100	400				
	Cadmium	mg/kg	1	900					20	80				
	Chromium (III+VI)	mg/kg	2					320						
	Copper	mg/kg	5	240000				85						
	Lead	mg/kg	5	1500				1800	100	400				
	Nickel	mg/kg	2	6000				60	40	160				
	Zinc	mg/kg	5	400000				330						
TRH - Semivolatile Fraction	C10-C16	mg/kg	50						1000					
	C16-C34	mg/kg	100					2500	3500					
	C34-C40	mg/kg	100					6600	10000					
	F2-NAPHTHALENE	mg/kg	50		NL	NL	NL	170						
	C10 - C14	mg/kg	50											
	C15 - C28	mg/kg	100											
	C29-C36	mg/kg	100											
	+C10 - C36 (Sum of total)	mg/kg	50						10000	40000				
	C10 - C40 (Sum of total)	mg/kg	50											
TRH - Semivolatile Fraction (Silica Gel Clean Up)	TPH C10-C14 Fraction after Silica Cleanup	mg/kg	50											
	TPH C15-C28 Fraction after Silica Cleanup	mg/kg	100											
	TPH C29-C36 Fraction after Silica Cleanup	mg/kg	100											
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50											
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100											
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100											
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50											
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50											
	>C10 - C40 Fraction (sum) (SG)	mg/kg	50											
TRH Volatiles/BTEX	Benzene	mg/kg	0.2		4	6	9	20	95		10	40		
	Ethylbenzene	mg/kg	0.5		NL	NL	NL	NL	185		600	2400		
	Naphthalene	mg/kg	1		NL	NL	NL	NL	370	370				
	Toluene	mg/kg	0.5		NL	NL	NL	NL	135		288	1152		
	C6 - C9	mg/kg	10								650	2600		
	Total BTEX	mg/kg	0.2											
	Xylene (m & p)	mg/kg	0.5											



				Field_ID																		
				LocCode																		
				Sample_Depth_Range																		
				Sampled_Date-Time																		
				Matrix_Description																		
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)												
Method_Type	ChemName	Units	EQL		0-1m	1-2m	2-4m	>4m	0-2m	0-2m												
	Xylene (o)	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Xylene Total	mg/kg	0.5		NL	NL	NL	NL	95			1000	4000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	C6-C10 less BTEX (F1)	mg/kg	10		310	480	NL	NL	215					<10	<10	<10	<10	<10	<10	<10	<10	
	C6-C10	mg/kg	10								800			<10	<10	<10	<10	<10	<10	<10	<10	

				Field_ID	TP25 0.1-0.3	PACM1	PACM2	PACM3	PACM4	PACM5	SS1	SS2	SS3	SS4
				LocCode	TP25	PACM1	PACM2	PACM3	PACM4	PACM5	SS1	SS2	SS3	SS4
				Sample_Depth_Range	0.1-0.3									
				Sampled_Date-Time	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017
				Matrix_Description										
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
Asbestos Classification and Quantitation per NEPM	Weight Used for % Calculation	kg	0.0001								-	-	-	-
	Asbestos (Fines and Fibrous <7mm)	g	0.0004								-	-	-	-
	Asbestos (Fines and Fibrous FA+AF)	% (w/w)	0.001								-	-	-	-
	Asbestos Containing Material	g	0.1								-	-	-	-
	Asbestos Containing Material (as 15% Asbestos in A	% (w/w)	0.01								-	-	-	-
	Fibrous Asbestos >7mm	g	0.0004								-	-	-	-
Asbestos Identification in Bulk Solids	Asbestos Type	-									-	-	-	-
	Asbestos Detected										Ch	Ch + Am + Cr	Ch + Am + Cr	Ch
	APPROVED IDENTIFIER:	--									Yes	Yes	Yes	Yes
	Unknown Mineral Fibre Detected	g/kg	0.1								G.Morgan	G.Morgan	G.Morgan	G.Morgan
Asbestos Identification in Soils	Asbestos Type	-									-	-	-	-
	Asbestos Detected										-	-	-	-
	Asbestos (Trace)	Fibres	5								-	-	-	-
	APPROVED IDENTIFIER:	--									-	-	-	-
Moisture Content	Moisture Content	%	1								8.6	-	-	-
PAH/Phenols (SIM)	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5								1.2	-	-	-
	Benzo(b+)fluoranthene	mg/kg	0.5								<0.5	-	-	-
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5								0.6	-	-	-
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5								<0.5	-	-	-
	Acenaphthene	mg/kg	0.5								<0.5	-	-	-
	Acenaphthylene	mg/kg	0.5								<0.5	-	-	-
	Anthracene	mg/kg	0.5								<0.5	-	-	-
	Benzo(a)anthracene	mg/kg	0.5								<0.5	-	-	-
	Benzo(a)pyrene	mg/kg	0.5					0.7		0.8	<0.5	-	-	-
	Benzo(ghi)perylene	mg/kg	0.5								<0.5	-	-	-
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	-	-	-
	Chrysene	mg/kg	0.5								<0.5	-	-	-
	Dibenzo(a,h)anthracene	mg/kg	0.5								<0.5	-	-	-
	Fluoranthene	mg/kg	0.5								<0.5	-	-	-
	Fluorene	mg/kg	0.5								<0.5	-	-	-
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5								<0.5	-	-	-
	Naphthalene (Ex SVOC)	mg/kg	0.5								<0.5	-	-	-
	PAHs (Sum of total)	mg/kg	0.5	4000							<0.5	-	-	-
	Phenanthrene	mg/kg	0.5								<0.5	-	-	-
	Pyrene	mg/kg	0.5								<0.5	-	-	-
	Total PAH (NSW Waste 2014)	mg/kg							200	800	<8	-	-	-
	Carcinogenic PAHs as B(a)P TPE	mg/kg									<1.16	-	-	-
	Mercury	mg/kg	0.1	730					4	16	<0.1	-	-	-
Total Mercury by FIMS											1.8	0.1	<0.1	0.4
Total Metals by ICP-AES	Arsenic	mg/kg	5	3000				160	100	400	5	-	-	-
	Cadmium	mg/kg	1	900					20	80	<1	-	-	-
	Chromium (III+VI)	mg/kg	2					320			12	-	-	-
	Copper	mg/kg	5	240000				85			18	-	-	-
	Lead	mg/kg	5	1500				1800	100	400	15	-	-	-
	Nickel	mg/kg	2	6000				60	40	160	8	-	-	-
	Zinc	mg/kg	5	400000				330			31	-	-	-
TRH - Semivolatile Fraction	C10-C16	mg/kg	50						1000		<50	-	-	-
	C16-C34	mg/kg	100					2500	3500		<100	-	-	-
	C34-C40	mg/kg	100					6600	10000		<100	-	-	-
	F2-NAPHTHALENE	mg/kg	50		NL	NL	NL	170			<50	-	-	-
	C10 - C14	mg/kg	50								<50	-	-	-
	C15 - C28	mg/kg	100								<100	-	-	-
	C29-C36	mg/kg	100								<100	-	-	-
	+C10 - C36 (Sum of total)	mg/kg	50						10000	40000	<50	-	-	-
	C10 - C40 (Sum of total)	mg/kg	50								<50	-	-	-
TRH - Semivolatile Fraction (Silica Gel Clean Up)	TPH C10-C14 Fraction after Silica Cleanup	mg/kg	50								-	-	-	-
	TPH C15-C28 Fraction after Silica Cleanup	mg/kg	100								-	-	-	-
	TPH C29-C36 Fraction after Silica Cleanup	mg/kg	100								-	-	-	-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50								-	-	-	-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100								-	-	-	-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100								-	-	-	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50								-	-	-	-
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50								-	-	-	-
	>C10 - C40 Fraction (sum) (SG)	mg/kg	50								-	-	-	-
TRH Volatiles/BTEX	Benzene	mg/kg	0.2		4	6	9	20	95	10	<0.2	-	-	-
	Ethylbenzene	mg/kg	0.5		NL	NL	NL	NL	185	600	<0.5	-	-	-
	Naphthalene	mg/kg	1		NL	NL	NL	NL	370	370	<1	-	-	-
	Toluene	mg/kg	0.5		NL	NL	NL	NL	135		<0.5	-	-	-
	C6 - C9	mg/kg	10							650	<10	-	-	-
	Total BTEX	mg/kg	0.2								<0.2	-	-	-
	Xylene (m & p)	mg/kg	0.5								<0.5	-	-	-



				Field_ID	TP25 0.1-0.3	PACM1	PACM2	PACM3	PACM4	PACM5	SS1	SS2	SS3	SS4
				LocCode	TP25	PACM1	PACM2	PACM3	PACM4	PACM5	SS1	SS2	SS3	SS4
				Sample_Depth_Range	0.1-0.3									
				Sampled_Date-Time	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017	22/11/2017
				Matrix_Description										
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
	Xylene (o)	mg/kg	0.5								<0.5	-	-	-
	Xylene Total	mg/kg	0.5	NL	NL	NL	NL	95		1000	<0.5	-	-	-
	C6-C10 less BTEX (F1)	mg/kg	10	310	480	NL	NL	215			<10	-	-	-
	C6-C10	mg/kg	10						800		<10	-	-	-

				Field_ID							SS5	SS6
				LocCode							SS5	SS6
				Sample_Depth_Range								
				Sampled_Date-Time							23/11/2017	22/11/2017
				Matrix_Description								
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)		
Method_Type	ChemName	Units	EQL	0-1m	1-2m	2-4m	>4m	0-2m	0-2m			
Asbestos Classification and Quantitation per NEPM	Weight Used for % Calculation	kg	0.0001								-	-
	Asbestos (Fines and Fibrous <7mm)	g	0.0004								-	-
	Asbestos (Fines and Fibrous FA+AF)	% (w/w)	0.001								-	-
	Asbestos Containing Material	g	0.1								-	-
	Asbestos Containing Material (as 15% Asbestos in A	% (w/w)	0.01								-	-
	Fibrous Asbestos >7mm	g	0.0004								-	-
Asbestos Identification in Bulk Solids	Asbestos Type	-									-	-
	Asbestos Detected										-	-
	APPROVED IDENTIFIER:	--									-	-
	Unknown Mineral Fibre Detected	g/kg	0.1								-	-
Asbestos Identification in Soils	Asbestos Type	-									-	-
	Asbestos Detected										-	-
	Asbestos (Trace)	Fibres	5								-	-
	APPROVED IDENTIFIER:	--									-	-
Moisture Content	Moisture Content	%	1								9.7	11.6
PAH/Phenols (SIM)	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5								1.2	1.2
	Benzo(b+j)fluoranthene	mg/kg	0.5								<0.5	<0.5
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5								0.6	0.6
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5								<0.5	<0.5
	Acenaphthene	mg/kg	0.5								<0.5	<0.5
	Acenaphthylene	mg/kg	0.5								<0.5	<0.5
	Anthracene	mg/kg	0.5								<0.5	<0.5
	Benzo(a)anthracene	mg/kg	0.5								<0.5	<0.5
	Benzo(a)pyrene	mg/kg	0.5					0.7		0.8	3.2	<0.5
	Benzo(ghi)perylene	mg/kg	0.5								<0.5	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	<0.5
	Chrysene	mg/kg	0.5								<0.5	<0.5
	Dibenzo(a,h)anthracene	mg/kg	0.5								<0.5	<0.5
	Fluoranthene	mg/kg	0.5								<0.5	<0.5
	Fluorene	mg/kg	0.5								<0.5	<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5								<0.5	<0.5
	Naphthalene (Ex SVOC)	mg/kg	0.5								<0.5	<0.5
	PAHs (Sum of total)	mg/kg	0.5	4000							<0.5	<0.5
	Phenanthrene	mg/kg	0.5								<0.5	<0.5
	Pyrene	mg/kg	0.5								<0.5	<0.5
	Total PAH (NSW Waste 2014)	mg/kg								200	800	<8
	Carcinogenic PAHs as B(a)P TPE	mg/kg		40						4	16	<1.16
	Mercury	mg/kg	0.1	730							<0.1	<0.1
Total Mercury by FIMS												
Total Metals by ICP-AES	Arsenic	mg/kg	5	3000				160		100	400	6
	Cadmium	mg/kg	1	900						20	80	<1
	Chromium (III+VI)	mg/kg	2					320				20
	Copper	mg/kg	5	240000				85				21
	Lead	mg/kg	5	1500				1800		100	400	87
	Nickel	mg/kg	2	6000				60		40	160	10
	Zinc	mg/kg	5	400000				330				95
TRH - Semivolatile Fraction	C10-C16	mg/kg	50							1000		<50
	C16-C34	mg/kg	100					2500		3500		<100
	C34-C40	mg/kg	100					6600		10000		<100
	F2-NAPHTHALENE	mg/kg	50		NL	NL	NL	170				<50
	C10 - C14	mg/kg	50									<50
	C15 - C28	mg/kg	100									<100
	C29-C36	mg/kg	100									<100
	+C10 - C36 (Sum of total)	mg/kg	50							10000	40000	<50
	C10 - C40 (Sum of total)	mg/kg	50									<50
TRH - Semivolatile Fraction (Silica Gel Clean Up)	TPH C10-C14 Fraction after Silica Cleanup	mg/kg	50									-
	TPH C15-C28 Fraction after Silica Cleanup	mg/kg	100									-
	TPH C29-C36 Fraction after Silica Cleanup	mg/kg	100									-
	TRH >C10-C16 (after silica gel clean-up)	mg/kg	50									-
	TRH >C16-C34 (after silica gel clean-up)	mg/kg	100									-
	TRH >C34-C40 (after silica gel clean-up)	mg/kg	100									-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/kg	50									-
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	mg/kg	50									-
	>C10 - C40 Fraction (sum) (SG)	mg/kg	50									-
TRH Volatiles/BTEX	Benzene	mg/kg	0.2		4	6	9	20	95		10	40
	Ethylbenzene	mg/kg	0.5		NL	NL	NL	NL	185		600	2400
	Naphthalene	mg/kg	1		NL	NL	NL	NL	370			<1
	Toluene	mg/kg	0.5		NL	NL	NL	NL	135		288	1152
	C6 - C9	mg/kg	10								650	2600
	Total BTEX	mg/kg	0.2									<0.2
	Xylene (m & p)	mg/kg	0.5									<0.5



												Field_ID	SS5	SS6	
												LocCode	SS5	SS6	
												Sample_Depth_Range			
												Sampled_Date-Time	23/11/2017	22/11/2017	
												Matrix_Description			
				NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	EILs derived according to NEPM 2013	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)					
Method_Type	ChemName	Units	EQL		0-1m	1-2m	2-4m	>4m	0-2m	0-2m					
	Xylene (o)	mg/kg	0.5											<0.5	<0.5
	Xylene Total	mg/kg	0.5		NL	NL	NL	NL	95			1000	4000	<0.5	<0.5
	C6-C10 less BTEX (F1)	mg/kg	10		310	480	NL	NL	215					<10	<10
	C6-C10	mg/kg	10								800			<10	<10

Method_Type	ChemName	Units	EQL	Field_ID	LocCode	WellCode	Sampled_Date-Time	TP3	WS1	FD1	WS2	WS4		
				ANZECC 2000 FW 95%	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Silt	NEPM 2013 Table 1C GILs, Drinking Water	NEPM 2013 Table 1C GILs, Fresh Waters							
								22/11/2017	22/11/2017	22/11/2017	22/11/2017	23/11/2017		
					2-4m	4-8m	>8m							
Metals, Ions and Cations	Exchangeable Magnesium	mg/L		-	-	-	-	-	-	3.5	8 - 8.3	-	-	14
	Sulfate as SO4 - Turbidimetric	mg/L	2	-	-	-	-	500	-	15	<2	-	-	7
	Ammonia	mg/L	0.1	0.9	-	-	-	-	0.9	1.1	<0.1	-	-	<0.1
	Arsenic	mg/L	0.01	-	-	-	-	0.01	-	<0.01	<0.01	-	-	<0.01
	Bicarbonate	mg/L	1	-	-	-	-	-	-	130	170	-	-	165
	BOD	mg/L	2	-	-	-	-	-	-	-	<2 - 2	-	-	2
	Cadmium	mg/L	0.0002	0.0002	-	-	-	0.002	0.0002	<0.0002	<0.0002	-	-	<0.0002
	Calcium	mg/L	0.1	-	-	-	-	-	-	2.9	39 - 40	-	-	22
	Chloride	mg/L	1	-	-	-	-	-	-	12	59 - 62	-	-	105
	Chromium (III+VI)	mg/L	0.01	-	-	-	-	-	-	<0.01	<0.01	-	-	<0.01
	Copper	mg/L	0.001	0.0014	-	-	-	2	0.0014	<0.001	<0.001	-	-	<0.001
	Fluoride	mg/L	0.01	-	-	-	-	1.5	-	0.13	0.22 - 0.23	-	-	0.45
	Iron	mg/L	0.01	-	-	-	-	-	-	0.01	0.02 - 0.03	-	-	0.1
	Lead	mg/L	0.001	0.0034	-	-	-	0.01	0.0034	<0.001	<0.001	-	-	<0.001
	Manganese	mg/L	0.01	1.9	-	-	-	0.5	1.9	0.03	<0.01	-	-	<0.01
	Mercury	mg/L	0.0001	0.0006	-	-	-	0.001	0.0006	<0.0001	<0.0001	-	-	<0.0001
	Nitrate (as NO3-)	mg/L	0.1	0.7	-	-	-	50	-	<0.1	<0.1	-	-	<0.1
	Nitrite (as NO2-)	mg/L	0.1	-	-	-	-	3	-	-	<0.1	-	-	<0.1
	Phosphate	µg/L	100	-	-	-	-	-	-	4600	<100	-	-	3300
	Potassium	mg/L	0.1	-	-	-	-	-	-	7.1	6.4 - 6.5	-	-	13
	Sodium	mg/L	1	-	-	-	-	-	-	53	40 - 43	-	-	78
	TDS	mg/L	1	-	-	-	-	-	-	160	245 - 250	-	-	310
	TOC	mg/L	1	-	-	-	-	-	-	115	8	-	-	11
	Zinc	mg/L	0.001	0.008	-	-	-	-	0.008	0.006	0.002 - 0.003	-	-	0.002
TRH - Semivolatile Fraction	C10-C16	mg/L	0.1	-	-	-	-	-	-	72.7	2	<0.1	-	<0.1
	C16-C34	mg/L	0.1	-	-	-	-	-	-	47.6	1.4	0.2	-	<0.1
	C34-C40	mg/L	0.1	-	-	-	-	-	-	1.95	<0.1	<0.1	-	<0.1
	F2-NAPHTHALENE	mg/L	0.1	-	NL	NL	NL	-	-	72.6	2	<0.1	-	<0.1
	C10 - C14	µg/L	50	-	-	-	-	-	-	45,600	1060	<50	-	<50
	C15 - C28	µg/L	100	-	-	-	-	-	-	74,300	2200	140	-	<100
	C29-C36	µg/L	50	-	-	-	-	-	-	2800	60	120	-	<50
	+C10 - C36 (Sum of total)	µg/L	50	-	-	-	-	-	-	123,000	3320	260	-	<50
	C10 - C40 (Sum of total)	µg/L	100	-	-	-	-	-	-	122,000	3400	200	-	<100
TRH - Total Recoverable Hydrocarbons - Silica Gel	TPH C10-C14 Fraction after Silica Cleanup	mg/L	0.05	-	-	-	-	-	-	-	0.48	-	-	-
	TPH C15-C28 Fraction after Silica Cleanup	mg/L	0.1	-	-	-	-	-	-	-	0.83	-	-	-
	TPH C29-C36 Fraction after Silica Cleanup	mg/L	0.05	-	-	-	-	-	-	-	<0.05	-	-	-
	TRH >C10-C16 (after silica gel clean-up)	mg/L	0.1	-	-	-	-	-	-	-	0.82	-	-	-
	TRH >C16-C34 (after silica gel clean-up)	mg/L	0.1	-	-	-	-	-	-	-	0.47	-	-	-
	TRH >C34-C40 (after silica gel clean-up)	mg/L	0.1	-	-	-	-	-	-	-	<0.1	-	-	-
	TRH C10-C36 (Total) (after silica gel clean-up)	mg/L	0.05	-	-	-	-	-	-	-	1.31	-	-	-
TRH Volatiles/BTEX	Benzene	µg/L	1	950	30000	30000	30000	1	950	<1	<1	<1	-	<1
	Ethylbenzene	µg/L	2	-	NL	NL	NL	300	-	6	<2	<2	-	<2
	Naphthalene	mg/L	0.005	0.016	NL	NL	NL	-	0.016	0.048	<0.005	<0.005	-	<0.005
	Toluene	µg/L	2	-	NL	NL	NL	800	-	11	<2	<2	-	<2
	C6 - C9	µg/L	20	-	-	-	-	-	-	160	<20	<20	-	<20
	Total BTEX	mg/L	0.001	-	-	-	-	-	-	0.079	<0.001	<0.001	-	<0.001
	Xylene (m & p)	µg/L	2	-	-	-	-	-	-	47	<2	<2	-	<2
	Xylene (o)	µg/L	2	350	-	-	-	-	350	15	<2	<2	-	<2
	Xylene Total	µg/L	2	-	NL	NL	NL	600	-	62	<2	<2	-	<2
	C6-C10 less BTEX (F1)	mg/L	0.02	-	NL	NL	NL	-	-	0.26	<0.02	<0.02	-	<0.02
	C6-C10	mg/L	0.02	-	-	-	-	-	-	0.34	<0.02	<0.02	-	<0.02

APPENDIX E2 - RESULTS SUMMARY TABLES EASTERN PORTION

TABLE A - RESULTS SUMMARY FOR REUSE

Environmental Earth Sciences Sample ID:									TP1-1	TP2-1	TP2-2	TP3-1	TP4-1	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2	STP3-2	STP4-1	DTP2-1	DTP4-1	SBH1	SBH2	SBH3	SBH4	SBH5	SBH6			
Sample Depth (m):									0.6m	0.1m	0.25m	0.30m	0.30m	0.30m	0.20m	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile	Levee wall	Levee wall	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile			
Lab Batch ID:									195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714			
Sample date:									29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18
Analyte grouping/Analyte	Units	LOR	HIL-D	HSL D 0 - <1m	HSL D 1 - <2m	ML	ESL	EIL																							
Moisture Content																															
Moisture content	%	0.1	----	-----	-----	-----	-----	-----	8.4	12	14	10	13	14	9.1	10	11	7.7	5.9	12	13	12	12	14	12	14	14				
Heavy Metals																															
Arsenic	mg/kg	4	3,000	----	-----	-----	-----	40	5	<4	5	5	<4	<4	6	5	6	5	<4	5	5	5	6	6	7	6	<4				
Cadmium	mg/kg	0.4	900	----	-----	-----	-----	----	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.8	<0.4	0.8	<0.4	<0.4				
Chromium (total) **	mg/kg	1	3,600	----	-----	-----	-----	75	15	9	9	9	8	15	10	15	22	14	9	18	13	13	15	23	17	21	21	14			
Copper	mg/kg	1	240,000	----	-----	-----	-----	50	19	25	39	30	30	26	15	23	21	23	85	30	24	25	27	65	24	49	72	12			
Lead	mg/kg	1	1.5	----	-----	-----	-----	630	25	31	17	12	12	13	17	15	19	24	9	41	14	16	27	280	130	210	160	24			
Nickel	mg/kg	1	6,000	----	-----	-----	-----	35	12	10	18	15	12	17	8	11	11	15	10	20	12	12	18	18	7	12	11	6			
Zinc	mg/kg	1	400,000	----	-----	-----	-----	135	68	58	62	52	43	43	48	42	49	38	36	50	40	39	48	360	130	340	270	17			
Mercury	mg/kg	0.1	730	----	-----	-----	-----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1				
Polycyclic Aromatic Hydrocarbons																															
Naphthalene	mg/kg	0.1	----	NL	NL	----	----	10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.1	0.2	0.4	<0.1			
Acenaphthylene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.8	0.4	0.9	1.1	<0.1			
Acenaphthene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
Fluorene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	0.3	<0.1			
Phenanthrene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.3	4.1	1.7	4.8	6.6	0.2			
Anthracene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	0.3	1.1	1.7	<0.1			
Fluoranthene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	<0.1	0.1	<0.1	<0.1	0.7	10	3.8	12	18	0.5			
Pyrene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.6	11	3.9	13	19	0.5			
Benz[a]anthracene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	6.5	2	7.5	12	0.3			
Chrysene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.3	4.7	1.8	5.8	8.6	0.3			
Benzo[b+]k]fluoranthene	mg/kg	0.2	----	----	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	0.6	9.8	3.5	12	16	0.5				
Benzo[a]pyrene	mg/kg	0.05	----	----	----	----	1.4	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	0.3	6.5	2.3	8.3	11	0.3			
Indeno[1,2,3.cd]pyrene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	2.8	1	3.4	4.5	0.2			
Dibenz[a,h]anthracene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	0.2	0.7	0.9	<0.1			
Benzo[g,h,i]perylene	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.3	3.4	1.3	4.1	5.3	0.2			
BaP TEQ	mg/kg	----	40	----	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.1	3.2	11	16	<0.5			
Sum of PAHs	mg/kg	----	4,000	----	----	----	----	----	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	0.26	0.1	1.4	<LOR	0.1	<LOR	<LOR	3.5	61.7	22.3	74	105.4	3			
Organochlorine Pesticides																															
HCB	mg/kg	0.1	80	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			
alpha-BHC	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			
gamma-BHC	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			
beta-BHC	mg/kg	0.1	----	----	----	----	----	----	<0.1	<0.1	<0.1</																				

TABLE A - RESULTS SUMMARY FOR REUSE									
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Environmental Earth Sciences Sample ID:

Sample Depth (m):

Lab Batch ID:

Sample date: _____

Analyte grouping/Analyte		Units	LOR	HIL-D	HSL D 0 - <1m	HSL D 1 - <2m	ML	ESL	EIL																	
Moisture Content																										
Moisture content		%	0.1	----	----	----	----	----	----	16	9.2	9.3	9	10	13	9.4	15	30	18	12	21	13	14	13	20	20
Heavy Metals																										
Arsenic	mg/kg	4	3,000	----	----	----	----	----	40	6	<4	9	5	6	4	<4	4	4	5	5	4	<4	5	4	6	5
Cadmium	mg/kg	0.4	900	----	----	----	----	----	----	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
Chromium (total) **	mg/kg	1	3,600	----	----	----	----	----	75	19	12	16	15	15	17	10	13	12	16	15	17	10	16	15	17	16
Copper	mg/kg	1	240,000	----	----	----	----	----	50	12	17	11	11	26	11	10	18	26	7	8	17	6	27	10	14	18
Lead	mg/kg	1	1.5	----	----	----	----	----	630	42	16	15	18	19	13	11	18	17	14	22	17	11	19	26	19	16
Nickel	mg/kg	1	6,000	----	----	----	----	----	35	4	10	8	7	16	5	6	7	12	5	5	8	5	16	6	6	7
Zinc	mg/kg	1	400,000	----	----	----	----	----	135	41	37	30	28	48	12	13	36	59	11	16	23	10	47	18	29	28
Mercury	mg/kg	0.1	730	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Polycyclic Aromatic Hydrocarbons																										
Naphthalene	mg/kg	0.1	----	NL	NL	----	----	----	10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthylene	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthene	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Fluorene	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Phenanthrene	mg/kg	0.1	----	----	----	----	----	----	----	0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	
Anthracene	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Fluoranthene	mg/kg	0.1	----	----	----	----	----	----	----	0.4	0.3	0.3	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	----	----	----	----	----	----	----	0.5	0.2	0.2	<0.1	0.3	<0.1	<0.3	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	0.5	<0.1	<0.1	<0.1
Benz(a)anthracene	mg/kg	0.1	----	----	----	----	----	----	----	0.2	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	----	----	----	----	----	----	----	0.3	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(b+j+k)fluoranthene	mg/kg	0.2	----	----	----	----	----	----	----	0.5	0.3	0.3	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	----	----	----	----	----	1.4	----	0.3	0.1	0.1	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	----	----	----	----	----	----	----	0.2	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	----	----	----	----	----	----	----	0.2	0.2	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
BaP TEQ	mg/kg	----	40	----	----	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PAHs	mg/kg	----	4,000	----	----	----	----	----	----	2.7	1.5	1.2	<LOR	1.4	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	2.4	<LOR	<LOR	<LOR
Organochlorine Pesticides																										
HCB	mg/kg	0.1	80	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
alpha-BHC	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
gamma-BHC	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
beta-BHC	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Heptachlor	mg/kg	0.1	50	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
delta-BHC	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Aldrin	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Heptachlor Epoxide	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
gamma-Chlordane	mg/kg	0.1	530	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
alpha-chlordane	mg/kg	0.1		----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
pp-DDE	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Dieldrin	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Endrin	mg/kg	0.1	100	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
pp-DDD	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Endosulfan I	mg/kg	0.1	2,000	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Endosulfan II	mg/kg	0.1		----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Endosulfan Sulphate	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
pp-DDT	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Endrin Aldehyde	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Methoxychlor	mg/kg	0.1	2,500	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Total +ve Aldrin + Dieldrin	mg/kg	0.1	45	----	----	----	----	----	----	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	
Total +ve DDT+DDD+DDE	mg/kg	0.1	3,600	----	----	----	----	----	----	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	
Organophosphorous Pesticides																										
Azinphos-methyl (Guthion)	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Bromophos-ethyl	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chlorpyrifos	mg/kg	0.1	2,000	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chlorpyrifos-methyl	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Diazinon	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Dichlorvos	mg/kg	0.1	----	----	----	----	----	----	----	<0.1	<0.1	<0.1	<													

Notes:	
LOR	Laboratory limit of reporting
mg/kg	Milligrams per kilogram
HIL	Health Investigation Level for commercial / industrial land use scenario 'D' (ASC NEPM, 2013)
HSL	Health Screening Level for commercial / industrial land use scenario 'D' (ASC NEPM, 2013) (sand matrix)
ESL	Ecological screening level in commercial / industrial land use scenario. Coarse textured soils (ASC NEPM, 2013)
EIL	Ecological investigation level in commercial / industrial land use scenario (ASC NEPM, 2013)
ML	Management limit in commercial / industrial land use scenario (ASC NEPM, 2013)
NL	No risk-based limits derived for this contaminant
**	Criteria for Chromium VI adopted for total chromium
	Shaded results equal exceedance of particular criteria

LOR	Laboratory limit of reporting
mg/kg	Milligrams per kilogram
HIL	Health Investigation Level for commercial / industrial land use scenario "D" (ASC NEPM, 2013)
HSL	Health Screening Level for commercial / industrial land use scenario "D" (ASC NEPM, 2013) (sand matrix)
EIL	Ecological screening level in commercial / industrial land use scenario. Coarse textured soils (ASC NEPM, 2013)
ESL	Ecological investigation level in commercial / industrial land use scenario (ASC NEPM, 2013)
ML	Management limit in commercial / industrial land use scenario (ASC NEPM, 2013)
NL	No risk-based limits derived for this contaminant
**	Criteria for Chromium VI adopted for total chromium
	Shaded results equal exceedance of particular criteria

TABLE B - CONTAMINANT THRESHOLD WASTE SUMMARY

Environmental Earth Sciences Sample ID:

Sample Depth (m):

Lab Batch ID:

[illegible]

Notes:

LOR

mg/kg
mCT
GSW

REGULATORY

Laboratory limit of resorting

Milligrams per kilogram

General Solid Waste classification

Restricted Solid Waste classification
Household Waste classification

Hazardous waste classification

Guideline values from NSW EPA (2014) - Waste classification guidelines
Shaded results equal exceedance of particular criteria

[illegible]

TABLE C - ASBESTOS RESULTS

Environmental Earth Sciences Sample ID:		TP6-1	STP1-1	STP1-2	STP2-2	STP4-1	SBH1	SBH2	SBH3	SBH4	SBH5	SBH6	SBH7
Sample Depth (m):		Stockpile	Stockpile	Stockpile	Stockpile	Stockpile	Borehole	Borehole	Borehole	Borehole	Borehole	Borehole	Borehole
Lab Batch ID:		195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714	195714
Sample date:		29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	29-Jun-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18	02-Jul-18
Analyte grouping/Analyte	Units												
Test completes													
Sample mass / dimension tested	mm	35 g	35 g	30 g	40 g	35 g	30 g	30 g	30 g	25 g	25 g	30 g	40 g
Sample Description	g	Brown coarse grained soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown coarse grained soil & rocks	Brown coarse grained soil & rocks	Brown coarse grained soil & rocks	Brown coarse grained soil & rocks	Brown coarse grained soil & rocks	Brown coarse grained soil & rocks
Asbestos trace analysis		No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Asbestos ID in Soil	----	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)	No asbestos detected at reporting limit of 0.1/kg (organic fibres detected)

Notes:

g Grams
mm Millimetres

Environmental Earth Sciences Sample ID:		PACM1	PACM2	PACM3
Sample Depth (m):		Stockpile	Stockpile	Stockpile
Lab Batch ID:		195714	195714	195714
Sample date:		29-Jun-18	29-Jun-18	29-Jun-18
Analyte grouping/Analyte	Units			
Acid Base Accounting				
Sample mass / dimension tested	mm	55 x 30 x 4 mm	40 x 40 x 4 mm	80 x 45 x 5 mm
Sample Description		Grey fibre cement material	Grey fibre cement material	Beige layered fibre cement material
Asbestos in materials		Chrysotile, amosite & crocidolite asbestos detected	Chrysotile, amosite & crocidolite asbestos detected	No asbestos detected

Notes:

g Grams
mm Millimetres

TABLE D - SURFACE WATER RESULTS

Environmental Earth Sciences Sample ID:					DAM1	DAM2
Lab Batch ID:					195714	195714
Sample date:					02-Jul-18	02-Jul-18
Analyte grouping/Analyte	Units	LOR	HSL D 8 m+	GSL (Freshwater)		
Heavy Metals						
Arsenic	mg/L	0.001	----	0.013	0.001	0.001
Cadmium	mg/L	0.0001	----	0.0002	<0.0001	<0.0001
Chromium (total)	mg/L	0.01	----	0.001	0.001	<0.001
Copper	mg/L	0.001	----	0.0014	0.003	<0.001
Lead	mg/L	0.001	----	0.0034	0.001	<0.001
Nickel	mg/L	0.001	----	0.011	0.001	<0.001
Zinc	mg/L	0.001	----	0.008	0.01	0.002
Mercury	mg/L	0.00005	----	0.00006	<0.00005	<0.00005
Biological Parameters						
E. coli	cfu/100mL	1	----	----	440	<1
Faecal Coliforms	cfu/100mL	1	----	----	440	<1
22o C Plate Count	cfu/mL	1	----	----	2,000	910
Polycyclic Aromatic Hydrocarbons						
Naphthalene	µg/L	1	NL	16	<1	<1
Acenaphthylene	µg/L	1	----	----	<1	<1
Acenaphthene	µg/L	1	----	----	<1	<1
Fluorene	µg/L	1	----	----	<1	<1
Phenanthrene	µg/L	1	----	----	<1	<1
Anthracene	µg/L	1	----	----	<1	<1
Fluoranthene	µg/L	1	----	----	<1	<1
Pyrene	µg/L	1	----	----	<1	<1
Benz(a)anthracene	µg/L	1	----	----	<1	<1
Chrysene	µg/L	1	----	----	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	2	----	----	<2	<2
Benzo(a)pyrene	µg/L	1	----	----	<1	<1
Indeno(1.2.3.cd)pyrene	µg/L	1	----	----	<1	<1
Dibenz(a,h)anthracene	µg/L	1	----	----	<1	<1
Benzo(g,h,i)perylene	µg/L	1	----	----	<1	<1
Benzo(a)pyrene TEQ calc (zero)	µg/L	5	----	----	<5	<5
Sum of polycyclic aromatic hydrocarbons	µg/L	1	----	----	<LOR	<LOR
BTEX						
Benzene	µg/L	1	5,000	950	<1	<1
Toluene	µg/L	1	NL	----	<1	<1
Ethylbenzene	µg/L	1	NL	----	<1	<1
meta- & para-Xylene	µg/L	2	----	200	<2	<2
ortho-Xylene	µg/L	1	----	350	<1	<1
Total Xylenes	µg/L	---	NL	----	<LOR	<LOR
Total Recoverable Hydrocarbons						
TRH C6 - C10	µg/L	10	----	----	<10	<10
TPH C6 - C10 less BTEX (F1)	µg/L	10	6,000	----	<10	<10
TRH > C10-C16	µg/L	50	----	----	<50	<50
TRH > C10 - C16 less Naphthalene (F2)	µg/L	50	NL	----	<50	<50
TRH > C16-C34	µg/L	100	----	----	<100	<100
TRH > C34-C40	µg/L	100	----	----	<100	<100

Notes:

LOR
µg/L
mg/L
cfu/100mL
cfu/mL
HSL
HSL D
GSL

Laboratory limit of reporting
Micrograms per litre
Milligrams per litre
Coliform forming units per 100 ml
Coliform forming units per millilitre
Groundwater health screening levels for vapour intrusion in sand matrix (ASC NEPM, 2013)
HSLs in commercial / industrial land use scenario
Groundwater screening levels (ASC NEPM, 2013)

Shaded results equal exceedance of particular criteria

APPENDIX F1 – LABORATORY CERTIFICATION WESTERN PORTION

QUALITY CONTROL REPORT

Work Order	: ES1729844	Page	: 1 of 15
Client	: ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Sydney
Contact	: M BERBEROGLU	Contact	: Peter Ravlic
Address	: 82-84 Dickson Avenue ARTARMON NSW, AUSTRALIA 2064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 99221777	Telephone	: +61-2-8784 8555
Project	: 117102	Date Samples Received	: 27-Nov-2017
Order number	: ----	Date Analysis Commenced	: 28-Nov-2017
C-O-C number	: ----	Issue Date	: 08-Dec-2017
Sampler	: MB		
Site	: Wetherhill Park		
Quote number	: EN/010/17		
No. of samples received	: 88		
No. of samples analysed	: 47		



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>
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Tony DeSouza	Senior Microbiologist	Sydney Microbiology, Smithfield, NSW
Tony DeSouza	Senior Microbiologist	WRG Subcontracting, Smithfield, NSW

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 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

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: 1276131)									
ES1729785-029	Anonymous	EA055: Moisture Content	----	1	%	22.3	22.7	1.68	0% - 20%
ES1729844-020	FD1	EA055: Moisture Content	----	1	%	10.3	10.8	4.11	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1276132)									
ES1729844-044	TP12 0-0.2	EA055: Moisture Content	----	1	%	42.4	42.9	1.18	0% - 20%
ES1729844-066	TP22 0.2-0.3	EA055: Moisture Content	----	1	%	6.6	6.8	3.52	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1276133)									
ES1729844-080	FD2	EA055: Moisture Content	----	1	%	6.7	6.8	0.00	No Limit
ES1729865-009	Anonymous	EA055: Moisture Content	----	1	%	20.7	20.7	0.00	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1280677)									
EB1724787-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	2	1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	56	3.28	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	12	14	9.02	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	26	10.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	213	251	16.7	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	145	168	14.8	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	721	814	12.1	0% - 20%
ES1729844-023	TP4 0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	5	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	37	38	4.97	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	87	91	4.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc		7440-66-6	5	mg/kg	23	23	0.00	No Limit	
EG005T: Total Metals by ICP-AES (QC Lot: 1280679)									



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: 1280679) - continued									
ES1729844-050	TP15 0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	19	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	25	5.26	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	10	17.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	32	31	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	29	22	27.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	93	92	1.50	0% - 50%
ES1729844-070	TP23 1.0-1.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	36	35	4.60	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	33	36	6.48	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	26.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	27	29	8.87	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	26	19.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	71	85	18.0	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1280678)									
ES1729844-023	TP4 0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1280680)									
ES1729844-070	TP23 1.0-1.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 1291111)									
ES1729844-044	TP12 0-0.2	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	220	200	12.0	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071SG-S: C10 - C36 Fraction (sum)	----	50	mg/kg	220	200	9.52	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 1291111)									
ES1729844-044	TP12 0-0.2	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	270	210	25.2	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	140	120	18.6	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1274483)									
ES1729844-001	TP1 0.1-0.2	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



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: 1274483) - continued										
ES1729844-001	TP1 0.1-0.2	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		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	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
ES1729844-034	TP8 0.8-1.0	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	0.6	0.6	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	0.6	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	
			205-82-3							
		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	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.3	1.2	8.00	No Limit	
			EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1274488)								
ES1729844-058	TP19 0.2-0.4	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	



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: 1274488) - continued										
ES1729844-058	TP19 0.2-0.4	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	
			205-82-3							
		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	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
ES1729844-076	SS1	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	
			205-82-3							
		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	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274313)								
ES1729844-001	TP1 0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
ES1729844-034	TP8 0.8-1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274332)										
ES1729844-058	TP19 0.2-0.4	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
ES1729844-076	SS1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274484)										
ES1729844-001	TP1 0.1-0.2	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	

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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: 1274484) - continued									
ES1729844-001	TP1 0.1-0.2	EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1729844-034	TP8 0.8-1.0	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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274487)									
ES1729844-058	TP19 0.2-0.4	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
ES1729844-076	SS1	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274313)									
ES1729844-001	TP1 0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1729844-034	TP8 0.8-1.0	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: 1274332)									
ES1729844-058	TP19 0.2-0.4	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1729844-076	SS1	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: 1274484)									
ES1729844-001	TP1 0.1-0.2	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
ES1729844-034	TP8 0.8-1.0	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274487)									
ES1729844-058	TP19 0.2-0.4	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
ES1729844-076	SS1	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
EP080: BTEXN (QC Lot: 1274313)									
ES1729844-001	TP1 0.1-0.2	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

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: BTEXN (QC Lot: 1274313) - continued									
ES1729844-034	TP8 0.8-1.0	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
EP080: BTEXN (QC Lot: 1274332)									
ES1729844-058	TP19 0.2-0.4	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES1729844-076	SS1	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274157)									
ES1729858-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	30	20	0.00	No Limit
ES1729640-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274473)									
ES1729858-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1274480)									
ES1729849-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274157)									
ES1729858-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	20	0.00	No Limit
ES1729640-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274473)									

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Sub-Matrix: **WATER**

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 (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274473) - continued									
ES1729858-005	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1274480)									
ES1729849-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 1274157)									
ES1729858-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
ES1729640-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	2	2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	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: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1280677)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.1	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.0	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	92.9	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	96.7	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.9	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.7	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.5	80	122
EG005T: Total Metals by ICP-AES (QCLot: 1280679)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	104	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	99.0	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	103	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	109	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	108	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1280678)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	83.7	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1280680)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	74.6	70	105
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1291111)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	105	80	116
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	99.2	85	115
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	95.0	75	123
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 1291111)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	100	89	109
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	96.1	84	112
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	90.3	71	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1274483)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	114	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	110	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	108	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	112	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	114	75	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1274483) - continued								
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	115	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	113	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	114	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	100	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	108	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	99.4	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	104	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	88.2	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	92.5	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	80.4	63	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1274488)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	99.2	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	90.3	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	92.7	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	93.5	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	95.9	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	95.7	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	91.5	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.2	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	91.7	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	95.5	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	93.0	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	96.4	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	88.5	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	89.9	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	90.1	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	90.1	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274313)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274332)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.6	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274484)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	106	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	106	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	99.0	71	129



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274487)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	103	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	107	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	107	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274313)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	86.3	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274332)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	82.9	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274484)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	104	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	103	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	100	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274487)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	103	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	105	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	96.4	63	131
EP080: BTEXN (QCLot: 1274313)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	97.3	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	81.9	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	82.0	66	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	81.2	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.0	63	119
EP080: BTEXN (QCLot: 1274332)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.1	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	91.4	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	91.8	66	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.1	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.5	63	119

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1294432)								
EP071SG: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	90.0	75	117
EP071SG: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	96.6	81	113



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 1294432) - continued								
EP071SG: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	86.5	71	117
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 1294432)								
EP071SG: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	87.8	73	119
EP071SG: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	87.9	81	113
EP071SG: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	89.3	65	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274157)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	90.2	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274473)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	99.4	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	101	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	83.7	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274480)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	88.7	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	89.1	75	113
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274157)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	91.6	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274473)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	83.8	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	106	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	92.0	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274480)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	101	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	85.6	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	92.0	77	119
EP080: BTEXN (QCLot: 1274157)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	90.4	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	101	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	107	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	107	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	106	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	84.6	70	120

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.

Matrix Spike (MS) Report

<i>SpikeRecovery</i> (%)
100
90
80
70
60
50
40
30
20
10
0

Recovery Limits (%)

Client sample ID

Method: Compound

CAS Number

Concentration

MS

<i>Low</i>	<i>High</i>
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EB1724787-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.1	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	84.6	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	79.4	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	89.9	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	90.1	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	126	70	130

ES1729844-050	TP15 0.1-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	92.3	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	87.6	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	95.3	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	89.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	91.4	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	88.4	70	130

EB1724787-001	Anonymous	EG035T: Mercurv	7439-97-6	5 mg/kg	96.4	70	130
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ES1729844-050	TP15 0.1-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	83.3	70	130
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ES1729844-044	TP12 0-0.2	EP071SG-S: C10 - C14 Fraction	----	523 mg/kg	98.3	43	139
		EP071SG-S: C15 - C28 Fraction	----	2319 mg/kg	122	49	131
		EP071SG-S: C29 - C36 Fraction	----	1714 mg/kg	114	64	158

ES1729844-044	TP12 0-0.2	EP071SG-S: >C10 - C16 Fraction	----	860 mg/kg	94.3	33	137
		EP071SG-S: >C16 - C34 Fraction	----	3223 mg/kg	116	40	137
		EP071SG-S: >C34 - C40 Fraction	----	1058 mg/kg	103	30	190

ES1729844-001	TP1 0.1-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	113	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	111	70	130

ES1729844-058	TP19 0.2-0.4	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.7	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	91.6	70	130

ES1729844-001	TP1 0.1-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.4	70	130
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EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274332)

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 Project : 117102



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: 1274332) - continued							
ES1729844-058	TP19 0.2-0.4	EP080: C6 - C9 Fraction	----	32.5 mg/kg	91.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274484)							
ES1729844-001	TP1 0.1-0.2	EP071: C10 - C14 Fraction	----	523 mg/kg	95.7	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	116	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	122	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274487)							
ES1729844-058	TP19 0.2-0.4	EP071: C10 - C14 Fraction	----	523 mg/kg	103	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	126	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	126	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274313)							
ES1729844-001	TP1 0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	95.7	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274332)							
ES1729844-058	TP19 0.2-0.4	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274484)							
ES1729844-001	TP1 0.1-0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	97.7	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	116	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274487)							
ES1729844-058	TP19 0.2-0.4	EP071: >C10 - C16 Fraction	----	860 mg/kg	102	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	126	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	117	52	132
EP080: BTEXN (QCLot: 1274313)							
ES1729844-001	TP1 0.1-0.2	EP080: Benzene	71-43-2	2.5 mg/kg	107	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	93.0	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.6	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	83.3	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	82.2	70	130
EP080: BTEXN (QCLot: 1274332)							
ES1729844-058	TP19 0.2-0.4	EP080: Benzene	71-43-2	2.5 mg/kg	97.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	96.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	99.6	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	99.5	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70	130

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 Client : ENVIRONMENTAL EARTH SCIENCES
 Project : 117102



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: BTEXN (QCLot: 1274332) - continued							
ES1729844-058	TP19 0.2-0.4	EP080: Naphthalene	91-20-3	2.5 mg/kg	94.6	70	130
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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274157)							
ES1729858-005	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	86.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274473)							
ES1729858-005	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	118	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	103	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	114	67	153
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1274480)							
ES1729849-002	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	92.9	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	116	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	139	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274157)							
ES1729858-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	83.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274473)							
ES1729858-005	Anonymous	EP071: >C10 - C16 Fraction	----	250 µg/L	114	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	105	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	110	67	153
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1274480)							
ES1729849-002	Anonymous	EP071: >C10 - C16 Fraction	----	250 µg/L	101	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	116	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	107	67	153
EP080: BTEXN (QCLot: 1274157)							
ES1729858-005	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.4	70	130
		EP080: Toluene	108-88-3	25 µg/L	94.9	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	103	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	101	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	91.5	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1729844	Page	: 1 of 14
Client	: ENVIRONMENTAL EARTH SCIENCES	Laboratory	: Environmental Division Sydney
Contact	: M BERBEROGLU	Telephone	: +61-2-8784 8555
Project	: 117102	Date Samples Received	: 27-Nov-2017
Site	: Wetherhill Park	Issue Date	: 08-Dec-2017
Sampler	: MB	No. of samples received	: 88
Order number	: ----	No. of samples analysed	: 47

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- 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 : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
MW002: Heterotrophic Plate Count						
Sterile Plastic Bottle - Sodium Thiosulfate WS1, WS2	----	----	----	28-Nov-2017	23-Nov-2017	5
MW006: Faecal Coliforms & E.coli by MF						
Sterile Plastic Bottle - Sodium Thiosulfate WS1, WS2	----	----	----	28-Nov-2017	23-Nov-2017	5
MW007: Coliforms by MF						
Sterile Plastic Bottle - Sodium Thiosulfate WS1, WS2	----	----	----	28-Nov-2017	23-Nov-2017	5
MW013: Faecal Streptococci by MF						
Sterile Plastic Bottle - Sodium Thiosulfate WS1, WS2	----	----	----	28-Nov-2017	23-Nov-2017	5

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	2	40	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Total Recoverable Hydrocarbons - Silica Gel C	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Total Recoverable Hydrocarbons - Silica Gel C	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: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		22-Nov-2017	----	----	----	28-Nov-2017	06-Dec-2017	✓
TP1 0.1-0.2, TP2 0.8-1.0, TP3 1.2-1.3, DP1 3.8-4.0, TP6 0.2-0.3, TP8 0.8-1.0, TP11 0.1-0.3, TP12 0-0.2, TP14 0-0.2, TP16 0.2-0.3, TP19 0.2-0.4, TP21 0.1-0.3, TP21 1.4-1.5, TP23 0.2-0.3, TP24 0.2-0.4, SS1, SS3, FD2,	TP1 2.0-2.2, TP2 4.0-4.2, FD1, TP4 0-0.2, TP7 0.1-0.2, TP9 0.1-0.3, TP11 0.5-0.7, TP13 0.1-0.2, TP15 0.1-0.2, TP18 0-0.1, TP20 0.1-0.3, TP21 0.8-0.9, TP22 0.2-0.3, TP23 1.0-1.2, TP25 0.1-0.3, SS2, SS4, SS6							
Soil Glass Jar - Unpreserved (EA055)	SS5	23-Nov-2017	----	----	----	28-Nov-2017	07-Dec-2017	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag - Subsampled by ALS (EA200)		22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✓
TP1 0.1-0.2, TP6 0.2-0.3, TP8 0.8-1.0, TP11 0.1-0.3, TP20 0.1-0.3, TP23 0.2-0.3	TP4 0-0.2, TP7 0.1-0.2, TP9 0.1-0.3, TP18 0-0.1, TP22 0.2-0.3,							
Snap Lock Bag: Separate bag received (EA200)	TP19 0.2-0.4	22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Subsampled by ALS (EA200)		22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✓
TP1 0.1-0.2, TP6 0.2-0.3, TP8 0.8-1.0, TP11 0.1-0.3, TP20 0.1-0.3, TP21 0.8-0.9, TP23 0.2-0.3	TP4 0-0.2, TP7 0.1-0.2, TP9 0.1-0.3, TP18 0-0.1, TP21 0.1-0.3, TP22 0.2-0.3,							
Snap Lock Bag: Separate bag received (EA200)	TP19 0.2-0.4	22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✓

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Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag - Subsampled by ALS (EA200N)								
TP21 0.1-0.3,	TP21 0.8-0.9	22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
TP1 0.1-0.2,	TP1 2.0-2.2,	22-Nov-2017	30-Nov-2017	21-May-2018	✓	01-Dec-2017	21-May-2018	✓
TP2 0.8-1.0,	TP2 4.0-4.2,							
TP3 1.2-1.3,	FD1,							
DP1 3.8-4.0,	TP4 0-0.2,							
TP6 0.2-0.3,	TP7 0.1-0.2,							
TP8 0.8-1.0,	TP9 0.1-0.3,							
TP11 0.1-0.3,	TP11 0.5-0.7,							
TP12 0-0.2,	TP13 0.1-0.2,							
TP14 0-0.2,	TP15 0.1-0.2,							
TP16 0.2-0.3,	TP18 0-0.1,							
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EG005T)								
SS5		23-Nov-2017	30-Nov-2017	22-May-2018	✓	01-Dec-2017	22-May-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		22-Nov-2017	30-Nov-2017	20-Dec-2017	✔	01-Dec-2017	20-Dec-2017	✔
TP1 0.1-0.2,	TP1 2.0-2.2,							
TP2 0.8-1.0,	TP2 4.0-4.2,							
TP3 1.2-1.3,	FD1,							
DP1 3.8-4.0,	TP4 0-0.2,							
TP6 0.2-0.3,	TP7 0.1-0.2,							
TP8 0.8-1.0,	TP9 0.1-0.3,							
TP11 0.1-0.3,	TP11 0.5-0.7,							
TP12 0-0.2,	TP13 0.1-0.2,							
TP14 0-0.2,	TP15 0.1-0.2,							
TP16 0.2-0.3,	TP18 0-0.1,							
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EG035T)		23-Nov-2017	30-Nov-2017	21-Dec-2017	✔	01-Dec-2017	21-Dec-2017	✔
SS5								
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)		22-Nov-2017	05-Dec-2017	06-Dec-2017	✔	07-Dec-2017	14-Jan-2018	✔
TP12 0-0.2,	TP14 0-0.2							
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)		22-Nov-2017	05-Dec-2017	06-Dec-2017	✔	07-Dec-2017	14-Jan-2018	✔
TP12 0-0.2,	TP14 0-0.2							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) TP1 0.1-0.2, TP2 0.8-1.0, TP3 1.2-1.3, DP1 3.8-4.0, TP6 0.2-0.3, TP8 0.8-1.0, TP11 0.1-0.3, TP12 0-0.2, TP14 0-0.2, TP16 0.2-0.3, TP1 2.0-2.2, TP2 4.0-4.2, FD1, TP4 0-0.2, TP7 0.1-0.2, TP9 0.1-0.3, TP11 0.5-0.7, TP13 0.1-0.2, TP15 0.1-0.2, TP18 0-0.1	22-Nov-2017	28-Nov-2017	06-Dec-2017	✔	29-Nov-2017	07-Jan-2018	✔	
Soil Glass Jar - Unpreserved (EP075(SIM)) TP19 0.2-0.4, TP21 0.1-0.3, TP21 1.4-1.5, TP23 0.2-0.3, TP24 0.2-0.4, SS1, SS3, FD2, TP20 0.1-0.3, TP21 0.8-0.9, TP22 0.2-0.3, TP23 1.0-1.2, TP25 0.1-0.3, SS2, SS4, SS6	22-Nov-2017	29-Nov-2017	06-Dec-2017	✔	29-Nov-2017	08-Jan-2018	✔	
Soil Glass Jar - Unpreserved (EP075(SIM)) SS5	23-Nov-2017	29-Nov-2017	07-Dec-2017	✔	29-Nov-2017	08-Jan-2018	✔	

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)		22-Nov-2017	28-Nov-2017	06-Dec-2017	✓	29-Nov-2017	06-Dec-2017	✓
TP1 0.1-0.2,	TP1 2.0-2.2,							
TP2 0.8-1.0,	TP2 4.0-4.2,							
TP3 1.2-1.3,	FD1,							
DP1 3.8-4.0,	TP4 0-0.2,							
TP6 0.2-0.3,	TP7 0.1-0.2,							
TP8 0.8-1.0,	TP9 0.1-0.3,							
TP11 0.1-0.3,	TP11 0.5-0.7,							
TP12 0-0.2,	TP13 0.1-0.2,							
TP14 0-0.2,	TP15 0.1-0.2,							
TP16 0.2-0.3,	TP18 0-0.1,							
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EP071)		22-Nov-2017	29-Nov-2017	06-Dec-2017	✓	30-Nov-2017	08-Jan-2018	✓
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EP080)		23-Nov-2017	28-Nov-2017	07-Dec-2017	✓	29-Nov-2017	07-Dec-2017	✓
SS5								
Soil Glass Jar - Unpreserved (EP071)		23-Nov-2017	29-Nov-2017	07-Dec-2017	✓	30-Nov-2017	08-Jan-2018	✓
SS5								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)		22-Nov-2017	28-Nov-2017	06-Dec-2017	✔	29-Nov-2017	06-Dec-2017	✔
TP1 0.1-0.2,	TP1 2.0-2.2,							
TP2 0.8-1.0,	TP2 4.0-4.2,							
TP3 1.2-1.3,	FD1,							
DP1 3.8-4.0,	TP4 0-0.2,							
TP6 0.2-0.3,	TP7 0.1-0.2,							
TP8 0.8-1.0,	TP9 0.1-0.3,							
TP11 0.1-0.3,	TP11 0.5-0.7,							
TP12 0-0.2,	TP13 0.1-0.2,							
TP14 0-0.2,	TP15 0.1-0.2,							
TP16 0.2-0.3,	TP18 0-0.1,							
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EP071)		22-Nov-2017	29-Nov-2017	06-Dec-2017	✔	30-Nov-2017	08-Jan-2018	✔
TP19 0.2-0.4,	TP20 0.1-0.3,							
TP21 0.1-0.3,	TP21 0.8-0.9,							
TP21 1.4-1.5,	TP22 0.2-0.3,							
TP23 0.2-0.3,	TP23 1.0-1.2,							
TP24 0.2-0.4,	TP25 0.1-0.3,							
SS1,	SS2,							
SS3,	SS4,							
FD2,	SS6							
Soil Glass Jar - Unpreserved (EP080)		23-Nov-2017	28-Nov-2017	07-Dec-2017	✔	29-Nov-2017	07-Dec-2017	✔
SS5								
Soil Glass Jar - Unpreserved (EP071)		23-Nov-2017	29-Nov-2017	07-Dec-2017	✔	30-Nov-2017	08-Jan-2018	✔
SS5								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis									
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation							
EP080: BTEXN														
Soil Glass Jar - Unpreserved (EP080)	22-Nov-2017	28-Nov-2017	06-Dec-2017	✔	29-Nov-2017	06-Dec-2017	✔							
TP1 0.1-0.2, TP2 0.8-1.0, TP3 1.2-1.3, DP1 3.8-4.0, TP6 0.2-0.3, TP8 0.8-1.0, TP11 0.1-0.3, TP12 0-0.2, TP14 0-0.2, TP16 0.2-0.3, TP19 0.2-0.4, TP21 0.1-0.3, TP21 1.4-1.5, TP23 0.2-0.3, TP24 0.2-0.4, SS1, SS3, FD2,								TP1 2.0-2.2, TP2 4.0-4.2, FD1, TP4 0-0.2, TP7 0.1-0.2, TP9 0.1-0.3, TP11 0.5-0.7, TP13 0.1-0.2, TP15 0.1-0.2, TP18 0-0.1, TP20 0.1-0.3, TP21 0.8-0.9, TP22 0.2-0.3, TP23 1.0-1.2, TP25 0.1-0.3, SS2, SS4, SS6						
Soil Glass Jar - Unpreserved (EP080)								SS5						

Matrix: **SOLID**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200) PACM1, PACM2	PACM3,	22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✔
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) PACM4,	PACM5	22-Nov-2017	----	----	----	30-Nov-2017	21-May-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup							
Amber Glass Bottle - Unpreserved (EP071SG) WS1	22-Nov-2017	28-Nov-2017	29-Nov-2017	✓	07-Dec-2017	07-Jan-2018	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup							
Amber Glass Bottle - Unpreserved (EP071SG) WS1	22-Nov-2017	28-Nov-2017	29-Nov-2017	✓	07-Dec-2017	07-Jan-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) TP3, FD1	WS1,	22-Nov-2017	28-Nov-2017	29-Nov-2017	✓	29-Nov-2017	07-Jan-2018	✓
Amber Glass Bottle - Unpreserved (EP071) WS4		23-Nov-2017	29-Nov-2017	30-Nov-2017	✓	29-Nov-2017	08-Jan-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TP3, FD1	WS1,	22-Nov-2017	28-Nov-2017	06-Dec-2017	✓	28-Nov-2017	06-Dec-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) WS4		23-Nov-2017	28-Nov-2017	07-Dec-2017	✓	28-Nov-2017	07-Dec-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) TP3, FD1	WS1,	22-Nov-2017	28-Nov-2017	29-Nov-2017	✓	29-Nov-2017	07-Jan-2018	✓
Amber Glass Bottle - Unpreserved (EP071) WS4		23-Nov-2017	29-Nov-2017	30-Nov-2017	✓	29-Nov-2017	08-Jan-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TP3, FD1	WS1,	22-Nov-2017	28-Nov-2017	06-Dec-2017	✓	28-Nov-2017	06-Dec-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) WS4		23-Nov-2017	28-Nov-2017	07-Dec-2017	✓	28-Nov-2017	07-Dec-2017	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TP3, FD1	WS1,	22-Nov-2017	28-Nov-2017	06-Dec-2017	✓	28-Nov-2017	06-Dec-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) WS4		23-Nov-2017	28-Nov-2017	07-Dec-2017	✓	28-Nov-2017	07-Dec-2017	✓
MW002: Heterotrophic Plate Count								
Sterile Plastic Bottle - Sodium Thiosulfate (MW002) WS1,	WS2	22-Nov-2017	----	----	----	28-Nov-2017	23-Nov-2017	✗
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) WS1,	WS2	22-Nov-2017	----	----	----	28-Nov-2017	23-Nov-2017	✗
MW007: Coliforms by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) WS1,	WS2	22-Nov-2017	----	----	----	28-Nov-2017	23-Nov-2017	✗
MW013: Faecal Streptococci by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW013) WS1,	WS2	22-Nov-2017	----	----	----	28-Nov-2017	23-Nov-2017	✗



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard

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Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (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.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	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.
E.coli and Coliforms by Colilert	MM802	SOIL	Microbiological analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).
E.coli and Thermotolerant Coliforms by MPN	MM804	SOIL	Microbiological analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).
Heterotrophic (Total) Plate Count	* MM812	SOIL	Microbiological analysis subcontracted to ALS Scoresby. NATA accreditation does not cover performance of this service.
Faecal Streptococci and Enterococci	* MM817	SOIL	Microbiological analysis subcontracted to ALS Scoresby. NATA accreditation does not cover performance of this service.
Salmonella (absence / presence)	MM823	SOIL	Microbiological analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).



Analytical Methods	Method	Matrix	Method Descriptions
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	WATER	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 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
TRH Volatiles/BTEX	EP080	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. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Salmonella - VIDAS (absence / presence)	MM625	WATER	Microbiological analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).
Heterotrophic (Total) Plate Count @ 22C and 36C	MW002	WATER	In house: Referenced to AS4276.3.1- 2007
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
Coliforms by Membrane Filtration	MW007	WATER	In house: Referenced to AS 4276.5 - 2007
Faecal Streptococci by Membrane Filtration	MW013	WATER	In house: Referenced to APHA 9230A - 2005
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, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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 : ES1729844

Client : ENVIRONMENTAL EARTH SCIENCES Contact : M BERBEROGLU Address : 82-84 Dickson Avenue ARTARMON NSW, AUSTRALIA 2064 E-mail : mberberoglu@environmentalearthsciences.com Telephone : +61 02 99221777 Facsimile : +61 02 99221010 Project : 117102 Order number : ---- C-O-C number : ---- Site : Wetherhill Park Sampler : MB	Laboratory : Environmental Division Sydney Contact : Peter Ravlic Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : peter.ravlic@alsglobal.com Telephone : +61-2-8784 8555 Facsimile : +61-2-8784 8500 Page : 1 of 7 Quote number : ES2015ENVEAR0001 (EN/010/17) QC Level : NEPM 2013 B3 & ALS QC Standard
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Dates

Date Samples Received : 27-Nov-2017 14:30 Client Requested Due Date : 01-Dec-2017	Issue Date : 30-Nov-2017 Scheduled Reporting Date : 01-Dec-2017
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Delivery Details

Mode of Delivery : Undefined No. of coolers/boxes : 3 Receipt Detail :	Security Seal : Not Available Temperature : 10.2'C No. of samples received / analysed : 88 / 48
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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
- This is an updated SRN which indicates the addition of Sample 88.
- **Lab will follow Sample date 22/11/17 for Samples 1-84 and Sample 87 as labelled in Jar and Bottle**
- **Not received Red Metal Bottle**
- **Preliminary results for Micro Analysis for Sample 88 will be available on 05/12/17. However the final report with Salmonella Analysis will be complete on 11/12/17.**
- **Received Extra Jars for Samples 48, 52, 76, 77, 79, 83 and 84 on 30/11/17.**
- **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(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Faecal Streptococci , Salmonella , Total Coliforms , Total Plate Count Analysis in Soil and Salmonella in Water to be conducted by ALS SCORESBY
- Faecal Coliform and E.coli Analysis to be conducted by als Scoresby.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.



Sample Container(s)/Preservation Non-Compliances

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

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Classification and Quantitation per NEPM 2013 : EA200N		
TP21 0.1-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag: Separate bag received
TP21 0.8-0.9	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag: Separate bag received
Asbestos Identification in Soils : EA200		
TP1 0.1-0.2	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP4 0-0.2	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP6 0.2-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP7 0.1-0.2	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP8 0.8-1.0	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP9 0.1-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP11 0.1-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP18 0-0.1	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP20 0.1-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP21 0.1-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP21 0.8-0.9	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP22 0.2-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
TP23 0.2-0.3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
Coliforms by Membrane Filtration : MW007		
WS2B	- Miscellaneous Plastic Container	- Sterile Plastic Bottle - Sodium Thiosulfate
Faecal Streptococci by Membrane Filtration : MW013		
WS2B	- Miscellaneous Plastic Container	- Sterile Plastic Bottle - Sodium Thiosulfate
Heterotrophic (Total) Plate Count @ 22C and 36C : MW002		
WS2B	- Miscellaneous Plastic Container	- Sterile Plastic Bottle - Sodium Thiosulfate
Thermotolerant Coliforms & E.coli by Membrane Filtration : MW006		
WS2B	- Miscellaneous Plastic Container	- Sterile Plastic Bottle - Sodium Thiosulfate

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	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils - SOIL - MM814 (Subcontracted) Coliforms by MPN	SOIL - S-26 8 metals/TRH/BTEX/PAH
ES1729844-001	22-Nov-2017 00:00	TP1 0.1-0.2		✓	✓	✓
ES1729844-002	22-Nov-2017 00:00	TP1_0.8-1.0	✓			
ES1729844-003	22-Nov-2017 00:00	TP1 2.0-2.2		✓		✓
ES1729844-004	22-Nov-2017 00:00	TP1 3.3-3.5	✓			
ES1729844-006	22-Nov-2017 00:00	TP2 0-0.2	✓			
ES1729844-007	22-Nov-2017 00:00	TP2 0.8-1.0		✓		✓
ES1729844-008	22-Nov-2017 00:00	TP2 2.0-2.2	✓			
ES1729844-009	22-Nov-2017 00:00	TP2 3.0-3.2	✓			
ES1729844-010	22-Nov-2017 00:00	TP2 4.0-4.2		✓		✓
ES1729844-011	22-Nov-2017 00:00	TP3 0.2-0.3	✓			
ES1729844-012	22-Nov-2017 00:00	TP3 0.6-0.8	✓			
ES1729844-013	22-Nov-2017 00:00	TP3 1.2-1.3		✓		✓
ES1729844-014	22-Nov-2017 00:00	TP3 1.8-2.0	✓			
ES1729844-015	22-Nov-2017 00:00	TP3 2.3-2.5	✓			
ES1729844-017	22-Nov-2017 00:00	DP1 0.1-0.12	✓			
ES1729844-018	22-Nov-2017 00:00	DP1 0.8-1.0	✓			
ES1729844-019	22-Nov-2017 00:00	DP1 1.8-2.0	✓			
ES1729844-020	22-Nov-2017 00:00	FD1		✓		✓
ES1729844-021	22-Nov-2017 00:00	DP1 2.8-3.0	✓			
ES1729844-022	22-Nov-2017 00:00	DP1 3.8-4.0		✓		✓
ES1729844-023	22-Nov-2017 00:00	TP4 0-0.2		✓	✓	✓
ES1729844-024	22-Nov-2017 00:00	TP4 1.0-1.2	✓			
ES1729844-025	22-Nov-2017 00:00	TP4 1.3-1.5	✓			
ES1729844-026	22-Nov-2017 00:00	TP5 0.2-0.4	✓			
ES1729844-027	22-Nov-2017 00:00	TP 1.6-1.8	✓			
ES1729844-028	22-Nov-2017 00:00	TP6 0.2-0.3		✓	✓	✓
ES1729844-029	22-Nov-2017 00:00	TP6 0.5-0.6	✓			
ES1729844-030	22-Nov-2017 00:00	TP7 0.1-0.2		✓	✓	✓
ES1729844-031	22-Nov-2017 00:00	TP7 1.0-1.2	✓			
ES1729844-032	22-Nov-2017 00:00	TP7 2.3-2.5	✓			
ES1729844-033	22-Nov-2017 00:00	TP8 0.0-0.2	✓			
ES1729844-034	22-Nov-2017 00:00	TP8 0.8-1.0		✓	✓	✓
ES1729844-035	22-Nov-2017 00:00	TP8 1.8-2.0	✓			
ES1729844-036	22-Nov-2017 00:00	TP9 0.1-0.3		✓	✓	✓
ES1729844-037	22-Nov-2017 00:00	TP9 1.3-1.5	✓			
ES1729844-038	22-Nov-2017 00:00	TP10 0-0.2	✓			
ES1729844-039	22-Nov-2017 00:00	TP10 1.0-1.2	✓			
ES1729844-040	22-Nov-2017 00:00	TP11 0.1-0.3		✓	✓	✓
ES1729844-043	22-Nov-2017 00:00	TP11 0.5-0.7		✓		✓
ES1729844-044	22-Nov-2017 00:00	TP12 0-0.2		✓		✓
ES1729844-045	22-Nov-2017 00:00	TP12 0.3-0.5	✓			



			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils - SOIL - MM814 (Subcontracted) Coliforms by MPN	SOIL - S-26 8 metals/TRH/BTEX/PAH
ES1729844-046	22-Nov-2017 00:00	TP13 0.1-0.2		✓		✓
ES1729844-047	22-Nov-2017 00:00	TP13 0.4-0.5	✓			
ES1729844-048	22-Nov-2017 00:00	TP14 0-0.2		✓	✓	✓
ES1729844-049	22-Nov-2017 00:00	TP14 0.3-0.5	✓			
ES1729844-050	22-Nov-2017 00:00	TP15 0.1-0.2		✓		✓
ES1729844-051	22-Nov-2017 00:00	TP15 0.4-0.5	✓			
ES1729844-052	22-Nov-2017 00:00	TP16 0.2-0.3		✓	✓	✓
ES1729844-053	22-Nov-2017 00:00	TP16 0.8-1.0	✓			
ES1729844-054	22-Nov-2017 00:00	TP17 0-0.1	✓			
ES1729844-055	22-Nov-2017 00:00	TP17 0.5-0.6	✓			
ES1729844-056	22-Nov-2017 00:00	TP18 0-0.1		✓	✓	✓
ES1729844-057	22-Nov-2017 00:00	TP18 0.8-1.0	✓			
ES1729844-058	22-Nov-2017 00:00	TP19 0.2-0.4		✓	✓	✓
ES1729844-059	22-Nov-2017 00:00	TP19 0.8-1.0	✓			
ES1729844-060	22-Nov-2017 00:00	TP20 0.1-0.3		✓	✓	✓
ES1729844-061	22-Nov-2017 00:00	TP20 1.0-1.2	✓			
ES1729844-062	22-Nov-2017 00:00	TP21 0.1-0.3		✓		✓
ES1729844-063	22-Nov-2017 00:00	TP21 0.8-0.9		✓		✓
ES1729844-064	22-Nov-2017 00:00	TP21 1.4-1.5		✓		✓
ES1729844-066	22-Nov-2017 00:00	TP22 0.2-0.3		✓	✓	✓
ES1729844-067	22-Nov-2017 00:00	TP22 0.7-0.8	✓			
ES1729844-069	22-Nov-2017 00:00	TP23 0.2-0.3		✓	✓	✓
ES1729844-070	22-Nov-2017 00:00	TP23 1.0-1.2		✓		✓
ES1729844-071	22-Nov-2017 00:00	TP23 1.5-1.7	✓			
ES1729844-072	22-Nov-2017 00:00	TP24 0.2-0.4		✓		✓
ES1729844-073	22-Nov-2017 00:00	TP24 1.0-1.2	✓			
ES1729844-074	22-Nov-2017 00:00	TP25 0.1-0.3		✓		✓
ES1729844-075	22-Nov-2017 00:00	TP25 0.8-1.0	✓			
ES1729844-076	22-Nov-2017 00:00	SS1		✓	✓	✓
ES1729844-077	22-Nov-2017 00:00	SS2		✓	✓	✓
ES1729844-078	22-Nov-2017 00:00	SS3		✓		✓
ES1729844-079	22-Nov-2017 00:00	SS4		✓	✓	✓
ES1729844-080	22-Nov-2017 00:00	FD2		✓		✓
ES1729844-081	23-Nov-2017 00:00	SS5		✓		✓
ES1729844-082	22-Nov-2017 00:00	SS6		✓		✓



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - MM616 (FC & EC) (Subcontracted) Faecal Coliforms & E.Coli MPN in Soil	SOIL - MM800 (Subcontracted) Salmonella in Soil (absence / presence)	SOIL - MM812 (Subcontracted) Heterotrophic (Total) Plate Count	SOIL - MM817 (Subcontracted) Faecal Streptococci and Enterococci
ES1729844-048	22-Nov-2017 00:00	TP14 0-0.2		✓	✓	✓	✓
ES1729844-052	22-Nov-2017 00:00	TP16 0.2-0.3		✓	✓	✓	✓
ES1729844-062	22-Nov-2017 00:00	TP21 0.1-0.3	✓				
ES1729844-063	22-Nov-2017 00:00	TP21 0.8-0.9	✓				
ES1729844-076	22-Nov-2017 00:00	SS1		✓	✓	✓	✓
ES1729844-077	22-Nov-2017 00:00	SS2		✓	✓	✓	✓
ES1729844-079	22-Nov-2017 00:00	SS4		✓	✓	✓	✓

Matrix: **SOLID**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES1729844-005	22-Nov-2017 00:00	PACM1	✓
ES1729844-041	22-Nov-2017 00:00	PACM3	✓
ES1729844-042	22-Nov-2017 00:00	PACM2	✓
ES1729844-065	22-Nov-2017 00:00	PACM4	✓
ES1729844-068	22-Nov-2017 00:00	PACM5	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/TEXN
ES1729844-016	22-Nov-2017 00:00	TP3	✓
ES1729844-083	22-Nov-2017 00:00	WS1	✓
ES1729844-086	23-Nov-2017 00:00	WS4	✓
ES1729844-087	22-Nov-2017 00:00	FD1	✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - M8 - ES/EB TC, FC, E.coli & Plate Count MF	WATER - MW013 Faecal Streptococci by Membrane Filtration
ES1729844-083	22-Nov-2017 00:00	WS1	✓	✓
ES1729844-084	22-Nov-2017 00:00	WS2	✓	✓
ES1729844-088	30-Nov-2017 00:00	WS2B	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - MM532 (Subcontracted) Salmonella (absence / presence)
ES1729844-083	22-Nov-2017 00:00	WS1		✓
ES1729844-084	22-Nov-2017 00:00	WS2		✓
ES1729844-085	23-Nov-2017 00:00	WS3	✓	

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
MW002: Heterotrophic (Total) Plate Count @ 22C and 36C								
WS1	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
WS2	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
MW006: Thermotolerant Coliforms & E.coli by Membrane Filtration								
WS1	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
WS2	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
MW007: Coliforms by Membrane Filtration								
WS1	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
WS2	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
MW013: Faecal Streptococci by Membrane Filtration								
WS1	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	
WS2	Sterile Plastic Bottle - Sodium TI	----	23-Nov-2017	27-Nov-2017	✗	----	----	

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Environmental Division
Sydney

Site Location: Wetherill Park

Sampler: MB

Project Manager: MB

Laboratory: ALS

Sheet: 1 of 5

Work Order Reference
ES1729844



Telephone: + 61-2-8784 8555

No. of samples	Sample ID/ Depth	PID	Date sampled	Sample Matrix			Analysis Required							Hold
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) (S-26)	TRH, BTEXN, PAH, 8 metals, ACM (S-26 + EA200)	Asbestos (presence/ absence only) - (EA200 or EA200B)	Bonded, friable, and free fibres (EA200N)	Organic chlorine pesticides (OCP) / Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, faecal plate count, salmonella	TRH, BTEXN, 8 metals (W-5)	
1	TP1 0.1-0.2	1	22/11/2017	X										
2	TP1 0.8-1.0	3	22/11/2017	X										
3	TP1 2.0-2.2	3	22/11/2017	X										
4	TP1 3.3-3.5	4	22/11/2017	X										
5	PACM1	5	22/11/2017		X									
6	TP2 0.0-0.2	6	22/11/2017	X										
7	TP2 0.8-1.0	7	22/11/2017	X										
8	TP2 2.0-2.2	8	22/11/2017	X										
9	TP2 3.0-3.2	9	22/11/2017	X										
10	TP2 4.0-4.2	10	22/11/2017	X										
11	TP3 0.2-0.3	11	22/11/2017	X										
12	TP3 0.6-0.8	12	22/11/2017	X										
13	TP3 1.2-1.3	13	22/11/2017	X										
14	TP3 1.8-2.0	14	22/11/2017	X										
15	TP3 2.3-2.5	15	22/11/2017	X										
16	TP3	16	22/11/2017	X										
17	DP1 0.1-0.12	17	22/11/2017	X										
18	DP1 0.8-1.0	18	22/11/2017	X										
19	DP1 1.8-2.0	19	22/11/2017	X										
20	FD1	20	22/11/2017	X										
TOTAL				18	1	1	5	1	1	0	0	0	1	12

Lab / Analysis: **Nepean Lakes**
Organised by / Date: **Scorsby / 15-10-2017**
Relinquished By / Date: **Scorsby / 15-10-2017**
Connote / Courier: **Scorsby / 15-10-2017**
WO No: **15-10-2017**
Attach By PO / Location: **Scorsby / 15-10-2017**

IT

URGENT

Turn Around (circle): **NORMAL / 3 DAYS / 2 DAYS / 1 DAY**

Lab Quotation No. (if applicable): **EN/010/16**

Comments/ Instructions: **Standard turnaround please.**

Send report to (email address): **mberberoglu@environmentalearthsciences.com**

Cc: report to (email address): **cnewland@environmentalearthsciences.com**

Cc: invoice to (email address): **mberberoglu@environmentalearthsciences.com**

Name: **Mert Berberoglu**

Signature: **[Signature]**

Date: **24/11/2017**

Time: **11:00**

Sent off Site/Office by:

Receiving Lab:

1430

27/11/17

11:00

Phone: (02) 9922 1777
Fax: (02) 9922 1010

PO Box 380, North Sydney, NSW 2059

ENVIRONMENTAL
EARTH SCIENCES
IN KNEWCASTLE



Email: **mberberoglu@environmentalearthsciences.com**

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Laboratory: ALS

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 2 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID/EC reading)	Date sampled	Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-25]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organic chlorine pesticides (OCP) Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]	Hold	Sample-specific instructions/ notes
1	DP1 2.8-3.0	21	22/11/2017	X										X	
2	DP1 3.8-4.0	22	22/11/2017	X			X								
3	TP4 0.0-2	23	22/11/2017	X				X							
4	TP4 1.0-1.2	24	22/11/2017	X										X	
5	TP4 1.3-1.5	25	22/11/2017	X										X	
6	TP5 0.2-0.4	26	22/11/2017	X										X	
7	TP5 1.6-1.8	27	22/11/2017	X										X	
8	TP6 0.2-0.3	28	22/11/2017	X				X							
9	TP6 0.5-0.6	29	22/11/2017	X										X	
10	TP7 0.1-0.2	30	22/11/2017	X				X							
11	TP7 1.0-1.2	31	22/11/2017	X										X	
12	TP7 2.3-2.5	32	22/11/2017	X										X	
13	TP8 0.0-0.2	33	22/11/2017	X										X	
14	TP8 0.8-1.0	34	22/11/2017	X				X							
15	TP8 1.8-2.0	35	22/11/2017	X										X	
16	TP9 0.1-0.3	36	22/11/2017	X				X							
17	TP9 1.3-1.5	37	22/11/2017	X										X	
18	TP10 0.0-2	38	22/11/2017	X										X	
19	TP10 1.0-1.2	39	22/11/2017	X										X	
20	TP11 0.1-0.3	40	22/11/2017	X				X							
TOTAL				20	0	0	1	6	0	0	0	0	0	13	

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Comments/ Instructions:

Standard turnaround please.

Lab Quotation No. (if applicable): EN/010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Sent off Site/Office by:

Receiving Lab:

Receiving Lab:

Name: Mert Berberoglu
Signature: 
Date: 24/11/2017
Time: 11:00

Date: 24/11/17
Time: 1430103



ENVIRONMENTAL
EARTH SCIENCES
THE KNOWLEDGE AND THE POWER

Phone: (02) 9922 1777
Fax: (02) 9922 1010

PO Box 380, North Sydney, NSW 2059

Email: mberberoglu@environmentalearthsciences.com

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Laboratory: ALS

Job No: 117102

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 3 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (Pb)/EC reading	Date sampled	Sample Matrix			Analysis Required										Sample-specific instructions/ notes
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) (S-26)	TRH, BTEXN, PAH, 8 metals, ACM (S-28 + EA200)	Asbestos (presence/ absence only) - (EA200 or EA200B)	Bonded, friable, and free fibres (EA200N)	Organic phosphorus pesticides (OPP)	E.coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals (W-5)				
1	PACM3		22/11/2017			X											
2	PACM2		22/11/2017			X											
3	TP11 0.5-0.7	0.1	22/11/2017	X													
4	TP12 0-0.2	0.2	22/11/2017	X													
5	TP12 0.3-0.5		22/11/2017	X													
6	TP13 0.1-0.2	0.4	22/11/2017	X													
7	TP13 0.4-0.5		22/11/2017	X													
8	TP14 0-0.2	1.3	23/11/2017	X													
9	TP14 0.3-0.5		23/11/2017	X													
10	TP15 0.1-0.2	1.1	23/11/2017	X													
11	TP15 0.4-0.5		23/11/2017	X													
12	TP16 0.2-0.3	1.4	23/11/2017	X													
13	TP16 0.8-1.0		23/11/2017	X													
14	TP17 0-0.1		23/11/2017	X													
15	TP17 0.5-0.6		23/11/2017	X													
16	TP18 0-0.1	0.1	23/11/2017	X													
17	TP18 0.8-1.0		23/11/2017	X													
18	TP19 0.2-0.4	0.9	23/11/2017	X													
19	TP19 0.8-1.0		23/11/2017	X													
20	TP20 0.1-0.3	2.1	23/11/2017	X													
TOTAL				18	0	2	6	3	2	0	0	2	0				9

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Lab Quotation No. (if applicable): EN/010/16

Comments/ Instructions:

Standard turnaround please.

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

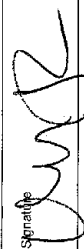
Sent off Site/Office by:

Mert Berberoglu

Receiving Lab:

50884610

Receiving Lab:

Signature: 

Date

24/11/2017

Time

11:00

1430 102



Phone: (02) 9922 1777

Fax: (02) 9922 1010

PO Box 360, North Sydney, NSW 2059

Email: mberberoglu@environmentalearthsciences.com

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Laboratory: ALS

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 4 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID/EC reading)	Date sampled	Sample Matrix			TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) (S-26)	TRH, BTEXN, PAH, 8 metals, ACM (S-26 + EA200)	Asbestos (presence/ absence only - [EA200 or EA200B])	Bonded, friable, and free fibres (EA200N)	Organic chlorine pesticides (OCP) Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals (W-5)						Sample-specific instructions/ notes
				Soil	Water	Fragment													
1	TP20 1.0-1.2	61	23/11/2017	X															
2	TP21 0.1-0.3	62	23/11/2017	X				X		X									
3	TP21 0.8-0.9	63	23/11/2017	X				X		X									
4	TP21 1.4-1.5	64	23/11/2017	X			X												
5	PACM4	65	23/11/2017			X			X										
6	TP22 0.2-0.3	66	23/11/2017	X				X											
7	TP22 0.7-0.8	67	23/11/2017	X															
8	PACM5	68	23/11/2017			X			X										
9	TP23 0.2-0.3	69	23/11/2017	X				X											
10	TP23 1.0-1.2	70	23/11/2017	X			X												
11	TP23 1.5-1.7	71	23/11/2017	X															
12	TP24 0.2-0.4	72	23/11/2017	X			X												
13	TP24 1.0-1.2	73	23/11/2017	X															
14	TP25 0.1-0.3	74	23/11/2017	X			X												
15	TP25 0.8-1.0	75	23/11/2017	X															
16	SS1	76	22/11/2017	X			X					X							
17	SS2	77	22/11/2017	X			X					X							
18	SS3	78	23/11/2017	X			X												
19	SS4	79	23/11/2017	X			X					X							
20	FD2	80	23/11/2017	X			X												
TOTAL				18	0	2	9	4	2	2	0	3	0						

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Lab Quotation No. (if applicable): EN/010/16

Comments/ Instructions:

Standard turnaround please.

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Sent off Site/Office by:

Mert Berberoglu

Signature

Date

Time

Receiving Lab:

scs/steph

24/11/17

11:00

1430

Receiving Lab:

Email: mberberoglu@environmentalearthsciences.com

Phone: (02) 9522 1777
Fax: (02) 9522 1010

c/o PO Box 380, North Sydney, NSW 2059

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Laboratory: ALS

Job No: 117102

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 5 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID/EC reading)	Date sampled	Sample Matrix			Analysis Required							Sample-specific instructions/ notes	
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organo chlorine pesticides (OCP) Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]		
1	SS5	81	23/11/2017	X			X								
2	SS6	82	23/11/2017	X			X								
3	WS1	83	23/11/2017		X							X			
4	WS2	84	23/11/2017		X							X			
5	WS3	85	23/11/2017		X									X	
6	WS4	86	23/11/2017		X							X			
7	FD1	87	23/11/2017		X							X			
8			23/11/2017												
9			23/11/2017												
10			23/11/2017												
11			23/11/2017												
12			23/11/2017												
13			23/11/2017												
14			23/11/2017												
15			23/11/2017												
16			22/11/2017												
17			22/11/2017												
18			23/11/2017												
19			23/11/2017												
20			23/11/2017												
TOTAL				2	5	0	2	0	0	0	0	2	3		

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Comments/ Instructions:

Standard turnaround please.

Lab Quotation No. (if applicable): EN/010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): mberberoglu@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

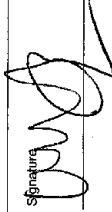
Sent off Site/Office by:

Mert Berberoglu

Receiving Lab:

Receiving Lab:

Name: Mert Berberoglu

Signature: 

Date: 24/11/2017

Time: 11:00

Phone: (02) 9922 1777

Fax: (02) 9922 1010

PO Box 380, North Sydney, NSW 2059

Email: mberberoglu@environmentalearthsciences.com



CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Project Manager: MB

Sampler: MB

Site Location: Weirhill Park

Job No: 117102
Laboratory: ALS

Environmental Division
Sydney
Work Order Reference
ES1729844

Sheet: 1 of 5

Telephone: +61-2-8794 8555



No. of samples	Sample ID/ Depth	PID	Date sampled	Sample Matrix			Analysis Required							Hold	Sample-specific instructions/ notes
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organic chlorine pesticides (OCP)/ Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]		
1	TP1 0.1-0.2		22/11/2017	X											
2	TP1 0.8-1.0		22/11/2017	X				X							X
3	TP1 2.0-2.2	0.7	22/11/2017	X				X							
4	TP1 3.3-3.5		22/11/2017	X											X
5	PACM1		22/11/2017			X			X						
6	TP2 0.0-0.2		22/11/2017	X											X
7	TP2 0.8-1.0	0.4	22/11/2017	X				X							
8	TP2 2.0-2.2		22/11/2017	X											X
9	TP2 3.0-3.2		22/11/2017	X											X
10	TP2 4.0-4.2	0	22/11/2017	X				X							
11	TP3 0.2-0.3		22/11/2017	X											X
12	TP3 0.6-0.8		22/11/2017	X											X
13	TP3 1.2-1.3	414	22/11/2017	X				X							
14	TP3 1.8-2.0		22/11/2017	X											X
15	TP3 2.3-2.5		22/11/2017	X											X
16	TP3		22/11/2017		X										
17	DP1 0.1-0.12		22/11/2017	X							X				X
18	DP1 0.8-1.0		22/11/2017	X											X
19	DP1 1.8-2.0		22/11/2017	X											X
20	FD1		22/11/2017	X				X							
TOTAL				18	1	1	5	1	1	0	0	0	1		12

Turn Around (circle): **NORMAL / 3 DAYS / 2 DAYS / 1 DAY**

Comments/ Instructions: Standard turnaround please.

Lab Quotation No. (if applicable): EN010/16

Send report to (email address): mberberoglou@environmentalearthsciences.com
Cc: report to (email address): cnewland@environmentalearthsciences.com
Cc: invoice to (email address): mberberoglou@environmentalearthsciences.com

Sent off Site/Office by: Mert Berberoglou
Receiving Lab: *SSS8K9mo*
Receiving Lab:

Name: Mert Berberoglou
Signature: *[Signature]*
Date: 24/11/2017
Time: 11:00
Ad: 27/11/17
1430

Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059
Email: mberberoglou@environmentalearthsciences.com



URGENT

Lab / Analysis: Newcastle
Organised by / Date: 15/11/2017
Relinquished by / Date: 22/11/2017
Complete / Contactor: *St. James*
WO No: *22/11/2017*
Attach by PO / *22/11/2017*

Laboratory: ALSSheet: 2 of 5Lab Quotation No. (if applicable): EN/010/16

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Time

11:00

130102

Email: mberberoglu@environmentalearthsciences.com



Laboratory: ALS

Sheet: 3 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Sample Matrix			Analysis Required								Hold	Sample-specific instructions/ notes
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organo chlorine pesticides (OCP) Organophosphorus pesticides (OPP)	E.coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]			
1	PACM3	41	22/11/2017			X										
2	PACM2	42	22/11/2017			X				X						
3	TP11 0.5-0.7	43	22/11/2017	X			X									
4	TP12 0-0.2	44	22/11/2017	X			X									
5	TP12 0.3-0.5	45	22/11/2017	X												X
6	TP13 0.1-0.2	46	22/11/2017	X			X									
7	TP13 0.4-0.5	47	22/11/2017	X												X
8	TP14 0-0.2	48	23/11/2017	X			X					X				
9	TP14 0.3-0.5	49	23/11/2017	X												X
10	TP15 0.1-0.2	50	23/11/2017	X			X									
11	TP15 0.4-0.5	51	23/11/2017	X												X
12	TP16 0.2-0.3	52	23/11/2017	X			X					X				
13	TP16 0.8-1.0	53	23/11/2017	X												X
14	TP17 0-0.1	54	23/11/2017	X												X
15	TP17 0.5-0.6	55	23/11/2017	X												X
16	TP18 0-0.1	56	23/11/2017	X				X								
17	TP18 0.8-1.0	57	23/11/2017	X												X
18	TP19 0.2-0.4	58	23/11/2017	X				X								
19	TP19 0.8-1.0	59	23/11/2017	X												X
20	TP20 0.1-0.3	60	23/11/2017	X			X									
TOTAL				18	0	2	6	3	2	0	0	0	2	0		9

Lab Quotation No. (if applicable) : EN/010/16

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Time

11:00

3

2

Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059
Email: mberberoglou@environment.nsw.gov.au

ENVIRONMETRICS
EARTH SCI
THE KNOWLEDGE AND THE



Laboratory: ALS

Sheet: 4 of 5Lab Quotation No. (if applicable): EN/010/16

Cc: invoice to (email address): memberoglu@environmentalearthsciences.com

Time

71:00

1430

100



ENVIRONMENTAL HEALTH & SAFETY
EARTH SCIENCES

THE UNIVERSITY OF MICHIGAN

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 5 of 5

Job No: 117102

Laboratory: ALS

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Sample Matrix			Analysis Required							Sample-specific instructions/ notes			
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organo chlorine pesticides (OCP)/ Organophosphorus pesticides (OPP)	E.coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]				
1	SS5	81	23/11/2017	X			X										
2	SS6	82	23/11/2017	X			X										
3	WS1	83	23/11/2017		X												
4	WS2	84	23/11/2017		X												
5	WS3	85	23/11/2017		X												
6	WS4	86	23/11/2017		X												
7	FD1	87	23/11/2017		X												
8			23/11/2017														
9			23/11/2017														
10			23/11/2017														
11			23/11/2017														
12			23/11/2017														
13			23/11/2017														
14			23/11/2017														
15			23/11/2017														
16			23/11/2017														
17			23/11/2017														
18			23/11/2017														
19			23/11/2017														
20			23/11/2017														
TOTAL				2	5	0	2	0	0	0	0	0	2	3			

Turn Around (circle): **NORMAL / 3 DAYS / 2 DAYS / 1 DAY**

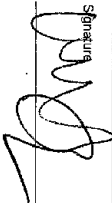
Comments/ Instructions: Standard turnaround please.

Lab Quotation No. (if applicable): EN/010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): crewlanc@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Name: Mert Berberoglu
Signature: 
Date: 24/11/2017
Time: 11:00

Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059
Email: mberberoglu@environmentalearthsciences.com



Receiving Lab: 

AS 24/11/17

1436 1072

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Environmental Division
Sydney
Work Order Reference
ES1729844

Laboratory: ALS

Job No: 117102

Site Location: Wetherill Park

Sampler: MB

Project Manager: MB

Sheet: 1 of 5



Telephone: +61-2-8784 8655

No. of samples	Sample ID/Depth	PID	Date sampled	Sample Matrix		Analysis Required											
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) (TS-26)	TRH, BTEXN, PAH, 8 metals, ACM (S-26 + EA200)	Asbestos (presence/absence only) - (EA200 or EA208)	Bonded, friable, and free fibres (EA208)	Organic chlorophosphorus pesticides (OCP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals (W-5)				
1	TP1 0.1-0.2	1	22/11/2017	X				X									
2	TP1 0.8-1.0	3	22/11/2017	X													
3	TP1 2.0-2.2	3	22/11/2017	X													
4	TP1 3.3-3.5	5	22/11/2017	X													
5	PACM1		22/11/2017			X											
6	TP2 0-0.2	6	22/11/2017	X													
7	TP2 0.8-1.0	7	22/11/2017	X													
8	TP2 2.0-2.2	8	22/11/2017	X													
9	TP2 3.0-3.2	9	22/11/2017	X													
10	TP2 4.0-4.2	10	22/11/2017	X													
11	TP3 0.2-0.3	11	22/11/2017	X													
12	TP3 0.6-0.8	12	22/11/2017	X													
13	TP3 1.2-1.3	13	22/11/2017	X													
14	TP3 1.8-2.0	14	22/11/2017	X													
15	TP3 2.3-2.5	15	22/11/2017	X													
16	TP3	16	22/11/2017	X													
17	DP1 0.1-0.12	17	22/11/2017	X													
18	DP1 0.8-1.0	18	22/11/2017	X													
19	DP1 1.8-2.0	19	22/11/2017	X													
20	FD1	20	22/11/2017	X													
TOTAL				18	1	1	5	1	1	0	0	0	1				12

Lab / Analysis: *Neerasted/Rodriguez*
Organised By / Date: *Goresby / 11.11.2017*
Relinquished By / Date: *G. Thompson*
Comnote / Carrier: *Shimadzu*
WO No: *117102*
Attach By PO / *11.11.2017*

1 mm layer of product noted

U R G E N T

U R G E N T

Lab Quotation No. (if applicable): EN/010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com
Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Name: *Mert Berberoglu*
Signature: *[Signature]*
Date: 24/11/2017
Time: 11:00
1430 1025 27/11/17



Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059

Email: mberberoglu@environmentalearthsciences.com

Turn Around (circle): **NORMAL / 3 DAYS / 2 DAYS / 1 DAY**

Comments/ Instructions: Standard turnaround please.

Sent off Site/Office by: *[Signature]*
Receiving Lab: *[Signature]*
Receiving Lab:

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Laboratory: ALS

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 2 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Sample Matrix	Analysis Required	Sample-specific instructions/ notes
				Soil	TRH, BTEXN, PAH, 8 metals, AOM [S-26 + EA200] Asbestos (presence/ absence only) - [EA200 or EA200B] Bonded, friable, and free fibres [EA200M] Organochlorine pesticides (OCP) Organophosphorus pesticides (OPP) E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	
1	DP1 2.8-3.0	21	22/11/2017	X	TRH, BTEXN, 8 metals [W-5]	Hold
2	DP1 3.8-4.0	22	22/11/2017	X		
3	TP4 0.0-2	23	22/11/2017	X		
4	TP4 1.0-1.2	24	22/11/2017	X		
5	TP4 1.3-1.5	25	22/11/2017	X		
6	TP5 0.2-0.4	26	22/11/2017	X		
7	TP5 1.6-1.8	27	22/11/2017	X		
8	TP6 0.2-0.3	28	22/11/2017	X		
9	TP6 0.5-0.6	29	22/11/2017	X		
10	TP7 0.1-0.2	30	22/11/2017	X		
11	TP7 1.0-1.2	31	22/11/2017	X		
12	TP7 2.3-2.5	32	22/11/2017	X		
13	TP8 0.0-0.2	33	22/11/2017	X		
14	TP8 0.8-1.0	34	22/11/2017	X		
15	TP8 1.8-2.0	35	22/11/2017	X		
16	TP9 0.1-0.3	36	22/11/2017	X		
17	TP9 1.3-1.5	37	22/11/2017	X		
18	TP10 0.0-0.2	38	22/11/2017	X		
19	TP10 1.0-1.2	39	22/11/2017	X		
20	TP11 0.1-0.3	40	22/11/2017	X		
	TOTAL			20	0 0 1 6 0 0 0 0 0 0	13

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Lab Quotation No. (if applicable): EN1010/16

Comments/ Instructions:

Standard turnaround please.

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): gnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Sent off Site/Office by:

Mert Berberoglu

Signature

Date 24/11/2017

Time

11:00

Receiving Lab:

Signature

Date 24/11/17

Time

1430

Receiving Lab:

Email: mberberoglu@environmentalearthsciences.com



Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059

Sheet: 3 of 5

memberoglul@environmentalearthsciences.com

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Laboratory: ALS

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 4 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID/EC reading)	Date sampled	Sample Matrix			Analysis Required										Sample-specific instructions/ notes	
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organic chlorine pesticides (OCP)/ Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]					
1	TP20 1.0-1.2	61	22/11/2017	X													X	
2	TP21 0.1-0.3	62	23/11/2017	X					X									
3	TP21 0.8-0.9	63	23/11/2017	X					X									
4	TP21 1.4-1.5	64	23/11/2017	X			X											
5	PACM4	65	23/11/2017			X				X								
6	TP22 0.2-0.3	66	23/11/2017	X					X									
7	TP22 0.7-0.8	67	23/11/2017	X													X	
8	PACM5	68	23/11/2017			X				X								
9	TP23 0.2-0.3	69	23/11/2017	X					X									
10	TP23 1.0-1.2	70	23/11/2017	X			X											
11	TP23 1.5-1.7	71	23/11/2017	X													X	
12	TP24 0.2-0.4	72	23/11/2017	X			X											
13	TP24 1.0-1.2	73	23/11/2017	X													X	
14	TP25 0.1-0.3	74	23/11/2017	X			X											
15	TP25 0.8-1.0	75	23/11/2017	X													X	
16	SS1	76	22/11/2017	X			X									X		
17	SS2	77	22/11/2017	X			X									X		
18	SS3	78	23/11/2017	X			X											
19	SS4	79	23/11/2017	X			X									X		
20	FD2	80	23/11/2017	X			X											
TOTAL				18	0	2	9	4	2	2	0	3	0					

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Comments/ Instructions:

Standard turnaround please.

Lab Quotation No. (if applicable): EN/010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Sent off Site/Office by:

Receiving Lab:

Receiving Lab:

Name
Mert Berberoglu

Signature
Date
24/11/2017

Time
11:00

Date
24/11/17



Phone: (02) 9922 1777
Fax: (02) 9922 1010
c/o PO Box 380, North Sydney, NSW 2059
Email: mberberoglu@environmentalearthsciences.com

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 117102

Laboratory: ALS

Project Manager: MB

Sampler: MB

Site Location: Wetherill Park

Sheet: 5 of 5

No. of samples	Sample ID/ Depth	Anticipated Result (PID/EC reading)	Date sampled	Sample Matrix			Analysis Required										Sample-specific instructions/ notes	
				Soil	Water	Fragment	TRH, BTEXN, PAH, 8 metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn) [S-26]	TRH, BTEXN, PAH, 8 metals, ACM [S-26 + EA200]	Asbestos (presence/ absence only) - [EA200 or EA200B]	Bonded, friable, and free fibres [EA200N]	Organic chlorine pesticides (OCP) Organophosphorus pesticides (OPP)	E. coli, faecal coliforms, faecal streptococci, total coliforms, total plate count, salmonella	TRH, BTEXN, 8 metals [W-5]					
1	SS5	81	23/11/2017	X			X											
2	SS6	82	23/11/2017	X			X											
3	WS1	83	23/11/2017		X								X					
4	WS2	84	23/11/2017		X								X					
5	WS3	85	23/11/2017		X													
6	WS4	86	23/11/2017		X								X					
7	FD1	87	23/11/2017		X								X					
8			23/11/2017															
9	WS2B	88	23/11/2017										X				no salmonella as discussed with MeA, 30-11-17	
10			23/11/2017															
11			23/11/2017															
12			23/11/2017															
13			23/11/2017															
14			23/11/2017															
15			23/11/2017															
16			23/11/2017															
17			23/11/2017															
18			23/11/2017															
19			23/11/2017															
20			23/11/2017															
TOTAL				2	5	0	2	0	0	0	0	0	0	2	3			

Turn Around (circle):

NORMAL / 3 DAYS / 2 DAYS / 1 DAY

Comments/ Instructions:

Standard turnaround please.

Lab Quotation No. (if applicable): EN010/16

Send report to (email address): mberberoglu@environmentalearthsciences.com

Cc: report to (email address): cnewland@environmentalearthsciences.com

Cc: invoice to (email address): mberberoglu@environmentalearthsciences.com

Sent off Site/Office by:

Mert Berberoglu

Receiving Lab:

Signature

Date

Time



ENVIRONMENTAL
EARTH SCIENCES
THE KNOWLEDGE AND THE HEAL

Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box 380, North Sydney, NSW 2059

Email: mberberoglu@environmentalearthsciences.com

[illegible]

Nikita Tuladhar

From: Sepan Mahamad on behalf of ALSEnviro Sydney
Sent: Tuesday, 5 December 2017 10:11 AM
To: Nikita Tuladhar
Cc: Saman Taeidi
Subject: FW: RESULTS & EDD for ALS Workorder : ES1729844 | Your Reference: 117102

Hi Nikita,

Please update ES1729844 as per the email below.

Thank you.

MANAGING PROJECTS OVER THE CHRISTMAS PERIOD – CLICK FOR MORE DETAILS

Please note there are some variations to opening hours during the Christmas / New Year period.

Kind regards,

Sepan Mahamad
Client Services Officer, Environmental
Sydney



T +61 2 8784 8555 **D** +61 2 8784 8534

F +61 2 8784 8500

sepan.mahamad@alsglobal.com

277-289 Woodpark Road
Smithfield NSW 2164 Australia

From: Mert Berberoglu [mailto:mberberoglu@environmentalearthsciences.com]
Sent: Tuesday, 5 December 2017 10:00 AM
To: ALSEnviro Sydney <ALSEnviro.Sydney@ALSGlobal.com>; Helen Simpson <helen.simpson@alsglobal.com>
Cc: Chris Newland <cnewland@environmentalearthsciences.com>
Subject: RE: RESULTS & EDD for ALS Workorder : ES1729844 | Your Reference: 117102

Hi,

Could I please request the following additional analyses:

TRH (C6-C40) with Silica Gel for the samples:

- WS1,
- TP14 0-0.2, and
- TP12 0-0.12

Regards,
Mert

Environmental Division
Sydney

Work Order Reference

ES1729844



Telephone : + 61-2-8784 8555



Please note that our offices will be closed from Tuesday the 19th of December and will reopen on Monday the 15th of January 2018. We would like to wish you and your family a wonderful time over this holiday season and a healthy, prosperous New Year. Rest assured, should you need anything from us urgently, we will be checking our emails intermittently during this period. We look forward to catching up with you in 2018.

Please think of our environment and only print this e-mail if necessary.

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From: angel-no-reply@alsglobal.com [<mailto:angel-no-reply@alsglobal.com>]

Sent: Monday, 4 December 2017 9:56 AM

To: Mert Berberoglu <mberberoglu@environmentalearthsciences.com>

Subject: RESULTS & EDD for ALS Workorder : ES1729844 | Your Reference: 117102



ALS Environmental

Deliverables for ALS Workorder ES1729844

Project: 117102

Dear M BERBEROGLU,

Please find enclosed the following deliverables for **ES1729844**:

- ES1729844_0_COA (Preliminary Report - 2017-Dec-4--09-54-40) .pdf
- ES1729844_0_ENMRG.CSV
- 117102.ESDAT_ES1729844_0.Chemistry2e.CSV
- 117102.ESDAT_ES1729844_0.Header.XML
- 117102.ESDAT_ES1729844_0.Sample2e.CSV
- ES1729844_0_QC.pdf
- ES1729844_0_QCI.pdf
- ES1729844_COC.pdf
- ES1729844_COC_1.pdf
- ES1729844_COC_2.pdf

Report Recipients

- M BERBEROGLU
 - ES1729844_0_COA (Preliminary Report - 2017-Dec-4--09-54-40) .pdf (Email)
 - ES1729844_0_ENMRG.CSV (Email)
 - 117102.ESDAT_ES1729844_0.Chemistry2e.CSV (Email)
 - 117102.ESDAT_ES1729844_0.Header.XML (Email)
 - 117102.ESDAT_ES1729844_0.Sample2e.CSV (Email)
 - ES1729844_0_QC.pdf (Email)
 - ES1729844_0_QCI.pdf (Email)
 - ES1729844_COC.pdf (Email)
 - ES1729844_COC_1.pdf (Email)
 - ES1729844_COC_2.pdf (Email)
- CHRIS NEWLAND
 - ES1729844_0_COA (Preliminary Report - 2017-Dec-4--09-54-40) .pdf (Email)
 - ES1729844_0_ENMRG.CSV (Email)
 - 117102.ESDAT_ES1729844_0.Chemistry2e.CSV (Email)
 - 117102.ESDAT_ES1729844_0.Header.XML (Email)
 - 117102.ESDAT_ES1729844_0.Sample2e.CSV (Email)
 - ES1729844_0_QC.pdf (Email)
 - ES1729844_0_QCI.pdf (Email)
 - ES1729844_COC.pdf (Email)
 - ES1729844_COC_1.pdf (Email)
 - ES1729844_COC_2.pdf (Email)

www.alsglobal.com

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SYDNEY ANALYTICAL LABORATORIES

Page 1 of 5

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
A.B.N. 81 829 182 852
NATA No: 1884

ANALYTICAL REPORT for:

ENVIRONMENTAL & EARTH SCIENCES

PO BOX 380
NORTH SYDNEY 2059

ATTN: M.BERBEROGLU

JOB NO: SAL26583

CLIENT ORDER: 117102

DATE RECEIVED: 24/11/17

DATE COMPLETED: 08/12/17

TYPE OF SAMPLES: WATERS

NO OF SAMPLES: 4



.....
Issued on 09/12/17
Lance Smith
(Chief Chemist)

ANALYTICAL REPORT

**JOB NO: SAL26583
CLIENT ORDER: 117102**

DATE OF COLLECTION	22/11/17	23/11/17
SAMPLES	WS1	WS4

pH		7.2		7.4
Total Dissolved Solids	mg/L	250		310
Biochemical Oxygen Demand	mg/L	2		2
Total Organic Carbon	mg/L	8		11
Copper	mg/L	<0.001		<0.001
Lead	mg/L	<0.001		<0.001
Zinc	mg/L	0.003		0.002
Cadmium	mg/L	<0.0002		<0.0002
Chromium	mg/L	<0.01		<0.01
Iron	mg/L	0.02		0.10
Manganese	mg/L	<0.01		<0.01
Arsenic	mg/L	<0.01		<0.01
Mercury	mg/L	<0.0001		<0.0001

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	43	1.871	78	3.393
Calcium Ca++	39	1.946	22	1.098
Potassium K+	6.5	0.166	13	0.333
Magnesium Mg++	8.0	0.658	14	1.152
Ammonia (Total)	<0.1		<0.1	

TOTAL CATIONS		4.641		5.976
---------------	--	-------	--	-------

Chloride Cl-	62	1.748	105	2.961
Fluoride F-	0.23	0.012	0.45	0.024
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	<2		7	0.146
Bicarbonate HCO3-	170	2.788	165	2.706
Phosphate PO4---	<0.1		3.3	0.104
Nitrite NO2-	<0.1		<0.1	

TOTAL ANIONS		4.548		5.941
--------------	--	-------	--	-------

ANALYTICAL REPORT

**JOB NO: SAL26583
CLIENT ORDER: 117102**

DATE OF COLLECTION	22/11/17	22/11/17
SAMPLES	FD1	TP3

pH		7.3		7.2
Total Dissolved Solids	mg/L	245		160
Biochemical Oxygen Demand	mg/L	<2		
Total Organic Carbon	mg/L	8		115
Copper	mg/L	<0.001		<0.001
Lead	mg/L	<0.001		<0.001
Zinc	mg/L	0.002		0.006
Cadmium	mg/L	<0.0002		<0.0002
Chromium	mg/L	<0.01		<0.01
Iron	mg/L	0.03		0.01
Manganese	mg/L	<0.01		0.03
Arsenic	mg/L	<0.01		<0.01
Mercury	mg/L	<0.0001		<0.0001

	mg/L	meq/L	mg/L	meq/L
Sodium Na+	40	1.740	53	2.306
Calcium Ca++	40	1.996	2.9	0.145
Potassium K+	6.4	0.164	7.1	0.182
Magnesium Mg++	8.3	0.683	3.5	0.288
Ammonia (Total)	<0.1		1.1	0.079

TOTAL CATIONS		4.583		3.000
---------------	--	-------	--	-------

Chloride Cl-	59	1.664	12	0.338
Fluoride F-	0.22	0.012	0.13	0.007
Nitrate NO3-	<0.1		<0.1	
Sulphate SO4--	<2		15	0.312
Bicarbonate HCO3-	170	2.788	130	2.132
Phosphate PO4---	<0.1		4.6	0.145
Nitrite NO2-	<0.1			

TOTAL ANIONS		4.464		2.934
--------------	--	-------	--	-------

ANALYTICAL REPORT

**JOB NO: SAL26583
CLIENT ORDER: 117102**

**DATE OF COLLECTION
SAMPLES**

**23/11/17
BLANK**

pH		7.0
Total Dissolved Solids	mg/L	<1
Biochemical Oxygen Demand	mg/L	<2
Total Organic Carbon	mg/L	<1
Copper	mg/L	<0.001
Lead	mg/L	<0.001
Zinc	mg/L	<0.001
Cadmium	mg/L	<0.0002
Chromium	mg/L	<0.01
Iron	mg/L	<0.01
Manganese	mg/L	<0.01
Arsenic	mg/L	<0.01
Mercury	mg/L	<0.0001

	mg/L	meq/L
Sodium Na+	<0.1	
Calcium Ca++	<0.1	
Potassium K+	<0.1	
Magnesium Mg++	<0.1	
Ammonia (Total)	<0.1	

TOTAL CATIONS

Chloride Cl-	<1
Fluoride F-	<0.1
Nitrate NO3-	<0.1
Sulphate SO4--	<2
Bicarbonate HCO3-	<1
Phosphate PO4---	<0.1
Nitrite NO2-	<0.1

TOTAL ANIONS

ANALYTICAL REPORT

JOB NO: SAL26583

CLIENT ORDER: 117102

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory, in accordance with APHA Standard Methods of Water and Wastewater 22nd Edition, or other approved methods listed below:

4500B	pH
2540C	Total Dissolved Solids
3500B	Sodium Na+
3111B	Calcium Ca++
3500B	Potassium K+
3111B	Magnesium Mg++
4500D	Chloride Cl-
4500C	Fluoride F-
4500F	Nitrate NO3-
4110B	Sulphate SO4--
2320B	Bicarbonate HCO3-
4500F	Phosphate PO4---
4500G	Ammonia (Total)
4500B	Nitrite NO2-
5210B	Biochemical Oxygen Demand
5310C	Total Organic Carbon
3111C	Copper
3111C	Lead
3111C	Zinc
3111C	Cadmium
3111B	Chromium
3111B	Iron
3111B	Manganese
3114B	Arsenic
3112B	Mercury

CERTIFICATE OF ANALYSIS

Work Order : **ES1729844**
Client : **ENVIRONMENTAL EARTH SCIENCES**
Contact : M BERBEROGLU
Address : 82-84 Dickson Avenue
 ARTARMON NSW, AUSTRALIA 2064
Telephone : +61 02 99221777
Project : 117102
Order number : ----
C-O-C number : ----
Sampler : MB
Site : Wetherhill Park
Quote number : EN/010/17
No. of samples received : 88
No. of samples analysed : 47

Page : 1 of 32
Laboratory : Environmental Division Sydney
Contact : Peter Ravlic
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 27-Nov-2017 14:30
Date Analysis Commenced : 28-Nov-2017
Issue Date : 08-Dec-2017 14:24



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

This Certificate of Analysis contains the following information:

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

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Tony DeSouza	Senior Microbiologist	Sydney Microbiology, Smithfield, NSW
Tony DeSouza	Senior Microbiologist	WRG Subcontracting, Smithfield, NSW



General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- CFU = colony forming unit
- MF = membrane filtration
- Microbiological Comment: HPC results are reported an approximate (~) when the count of colonies on the plate is outside the range of 10 - 300cfu, in accordance with ALS work instruction QWI-MIC/MW002.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Samples 083 and 084 received outside of holding time for Salmonella analysis. Holding time was not met. Therefore result may be indicative.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- Due to insufficient sample supplied, a volume of 50mL for MW006 was analysed resulting in an increased LOR of <2.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- MW002 is ALS's internal code and is equivalent to AS4276.3.1.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- MW007 is ALS's internal code and is equivalent to AS4276.5.
- MW013 is ALS's internal code and is equivalent to AS4276.9.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination



- Salmonella - VIDAS (MM625) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- HPC (MM608) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989. NATA accreditation does not cover performance of this method.
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1 0.1-0.2	TP1 2.0-2.2	TP2 0.8-1.0	TP2 4.0-4.2	TP3 1.2-1.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-001	ES1729844-003	ES1729844-007	ES1729844-010	ES1729844-013
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		5.6	22.2	11.4	16.4	10.9
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	----
Asbestos Type	1332-21-4	-	--		-	----	----	----	----
Sample weight (dry)	----	0.01	g		13.1	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	6	7	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		11	22	17	13	<2
Copper	7440-50-8	5	mg/kg		15	15	14	26	<5
Lead	7439-92-1	5	mg/kg		49	15	22	18	<5
Nickel	7440-02-0	2	mg/kg		6	6	6	6	<2
Zinc	7440-66-6	5	mg/kg		48	17	15	30	8
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	2.3
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	5.1
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	3.8
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<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	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<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	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<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	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1 0.1-0.2	TP1 2.0-2.2	TP2 0.8-1.0	TP2 4.0-4.2	TP3 1.2-1.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-001	ES1729844-003	ES1729844-007	ES1729844-010	ES1729844-013
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<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	11.2
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<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	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	26
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	3390
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	4680
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	680
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	8750
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	54
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	54
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	5600
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	2720
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	910
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	9230
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	5600
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		87.6	87.6	85.4	82.9	92.2
2-Chlorophenol-D4	93951-73-6	0.5	%		88.4	88.3	85.7	83.3	92.6
2,4,6-Tribromophenol	118-79-6	0.5	%		73.8	74.2	70.2	67.5	90.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1 0.1-0.2	TP1 2.0-2.2	TP2 0.8-1.0	TP2 4.0-4.2	TP3 1.2-1.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-001	ES1729844-003	ES1729844-007	ES1729844-010	ES1729844-013
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.3	91.5	89.3	88.0	96.2
Anthracene-d10	1719-06-8	0.5	%		89.8	88.8	86.8	85.9	93.0
4-Terphenyl-d14	1718-51-0	0.5	%		84.0	82.1	80.6	79.9	83.6
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		122	86.5	110	90.6	101
Toluene-D8	2037-26-5	0.2	%		109	86.0	104	94.0	102
4-Bromofluorobenzene	460-00-4	0.2	%		95.8	86.6	94.0	88.2	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FD1	DP1 3.8-4.0	TP4 0-0.2	TP6 0.2-0.3	TP7 0.1-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-020	ES1729844-022	ES1729844-023	ES1729844-028	ES1729844-030
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.3	15.3	4.2	14.6	2.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	No	No	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	No	No	No
Asbestos Type	1332-21-4	-	--		----	----	-	-	-
Sample weight (dry)	----	0.01	g		----	----	40.6	12.3	28.7
APPROVED IDENTIFIER:	----	-	--		----	----	S.SPOONER	S.SPOONER	S.SPOONER
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	<5	<5	6	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		15	13	4	25	19
Copper	7440-50-8	5	mg/kg		12	10	87	13	64
Lead	7439-92-1	5	mg/kg		20	11	<5	23	<5
Nickel	7440-02-0	2	mg/kg		5	7	37	10	114
Zinc	7440-66-6	5	mg/kg		13	36	23	16	51
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<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	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<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	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<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	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FD1	DP1 3.8-4.0	TP4 0-0.2	TP6 0.2-0.3	TP7 0.1-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-020	ES1729844-022	ES1729844-023	ES1729844-028	ES1729844-030
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<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	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		88.8	85.9	92.0	85.0	89.0
2-Chlorophenol-D4	93951-73-6	0.5	%		89.9	86.6	92.5	85.1	90.0
2,4,6-Tribromophenol	118-79-6	0.5	%		75.6	71.4	74.3	69.6	67.9



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FD1	DP1 3.8-4.0	TP4 0-0.2	TP6 0.2-0.3	TP7 0.1-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-020	ES1729844-022	ES1729844-023	ES1729844-028	ES1729844-030
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		92.5	89.4	96.4	88.8	93.9
Anthracene-d10	1719-06-8	0.5	%		90.8	87.7	94.3	87.3	91.7
4-Terphenyl-d14	1718-51-0	0.5	%		84.1	80.6	86.9	80.0	83.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		114	91.7	89.2	84.8	88.0
Toluene-D8	2037-26-5	0.2	%		116	93.2	111	102	107
4-Bromofluorobenzene	460-00-4	0.2	%		114	96.2	114	102	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP8 0.8-1.0	TP9 0.1-0.3	TP11 0.1-0.3	TP11 0.5-0.7	TP12 0-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-034	ES1729844-036	ES1729844-040	ES1729844-043	ES1729844-044
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.5	5.6	6.2	7.6	42.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	----
Asbestos Type	1332-21-4	-	--		-	-	-	----	----
Sample weight (dry)	----	0.01	g		27.8	18.6	22.3	----	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	G.MORGAN	G.MORGAN	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	6	54
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	3
Chromium	7440-47-3	2	mg/kg		25	42	56	38	28
Copper	7440-50-8	5	mg/kg		28	24	33	32	158
Lead	7439-92-1	5	mg/kg		16	20	22	22	368
Nickel	7440-02-0	2	mg/kg		20	40	46	36	25
Zinc	7440-66-6	5	mg/kg		47	46	57	56	2590
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	0.4
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	270
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	140
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	410
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	220
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	220
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP8 0.8-1.0	TP9 0.1-0.3	TP11 0.1-0.3	TP11 0.5-0.7	TP12 0-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-034	ES1729844-036	ES1729844-040	ES1729844-043	ES1729844-044
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	1.5	1.1	0.6	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		0.6	3.2	2.0	1.1	<0.5
Pyrene	129-00-0	0.5	mg/kg		0.7	3.6	2.3	1.1	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	1.4	0.9	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	1.5	0.9	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	2.2	1.2	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	0.7	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	2.3	1.2	0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	1.0	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	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	1.3	0.7	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		1.3	18.7	10.8	3.3	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	2.8	1.5	0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	3.1	1.8	0.8	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	3.4	2.0	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	600
C29 - C36 Fraction	----	100	mg/kg		<100	120	<100	<100	880
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	120	<50	<50	1480
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	150	<100	<100	1220
>C34 - C40 Fraction	----	100	mg/kg		<100	110	<100	<100	560
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	260	<50	<50	1780
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP8 0.8-1.0	TP9 0.1-0.3	TP11 0.1-0.3	TP11 0.5-0.7	TP12 0-0.2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-034	ES1729844-036	ES1729844-040	ES1729844-043	ES1729844-044
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		87.6	92.0	87.8	82.5	90.2
2-Chlorophenol-D4	93951-73-6	0.5	%		87.8	92.3	88.2	83.1	90.2
2,4,6-Tribromophenol	118-79-6	0.5	%		66.3	74.6	76.0	65.8	80.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		92.8	96.6	91.9	86.6	93.9
Anthracene-d10	1719-06-8	0.5	%		90.0	93.3	91.0	83.9	90.2
4-Terphenyl-d14	1718-51-0	0.5	%		83.1	85.2	82.3	76.8	84.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.2	93.4	93.5	94.2	79.6
Toluene-D8	2037-26-5	0.2	%		101	109	102	107	88.9
4-Bromofluorobenzene	460-00-4	0.2	%		101	105	101	102	75.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP13 0.1-0.2	TP14 0-0.2	TP15 0.1-0.2	TP16 0.2-0.3	TP18 0-0.1
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-046	ES1729844-048	ES1729844-050	ES1729844-052	ES1729844-056
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		7.2	23.1	15.8	4.4	11.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	----	----	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	----	No
Asbestos Type	1332-21-4	-	--		----	----	----	----	-
Sample weight (dry)	----	0.01	g		----	----	----	----	29.2
APPROVED IDENTIFIER:	----	-	--		----	----	----	----	G.MORGAN
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	8	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		22	15	19	4	13
Copper	7440-50-8	5	mg/kg		18	394	32	10	43
Lead	7439-92-1	5	mg/kg		24	54	29	7	13
Nickel	7440-02-0	2	mg/kg		9	10	24	5	22
Zinc	7440-66-6	5	mg/kg		47	229	93	36	94
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.1	1.7	<0.1	0.4	<0.1
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	450	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	450	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	400	----	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	400	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP13 0.1-0.2	TP14 0-0.2	TP15 0.1-0.2	TP16 0.2-0.3	TP18 0-0.1
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-046	ES1729844-048	ES1729844-050	ES1729844-052	ES1729844-056
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<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	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<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	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<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	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<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	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	5730	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	960	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	6690	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	110	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	6460	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	320	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	6890	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	110	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP13 0.1-0.2	TP14 0-0.2	TP15 0.1-0.2	TP16 0.2-0.3	TP18 0-0.1
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-046	ES1729844-048	ES1729844-050	ES1729844-052	ES1729844-056
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
MM802: E.coli and Coliforms by Colilert									
Total Coliforms (Colilert)	----	10	orgs/g		----	7100	----	140	----
MM804: E.coli and Thermotolerant Coliforms by MPN									
Escherichia coli	----	2	orgs/g		----	<3	----	<3	----
Faecal Coliforms	----	2	orgs/g		----	170	----	94	----
MM812: Heterotrophic (Total) Plate Count									
Ø Heterotrophic Plate Count (22°C)	----	10	orgs/g		----	13000	----	100000	----
Ø Heterotrophic Plate Count (25°C)	----	10	orgs/g		----	16000	----	71000	----
MM817: Faecal Streptococci and Enterococci									
Ø Faecal Streptococci	----	1	orgs/g		----	530	----	5	----
MM823: Salmonella (absence / presence)									
Salmonella spp.	----	-	-		----	Not Detected	----	Not Detected	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		87.5	84.4	83.1	81.4	85.4
2-Chlorophenol-D4	93951-73-6	0.5	%		87.6	85.2	82.9	82.8	86.2
2,4,6-Tribromophenol	118-79-6	0.5	%		62.7	73.5	71.1	66.5	69.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.3	88.1	85.1	85.9	89.5
Anthracene-d10	1719-06-8	0.5	%		91.5	85.5	84.0	83.8	88.0
4-Terphenyl-d14	1718-51-0	0.5	%		84.7	73.6	77.0	76.9	80.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		88.7	91.0	92.9	97.5	100.0
Toluene-D8	2037-26-5	0.2	%		99.1	95.8	97.8	98.3	102
4-Bromofluorobenzene	460-00-4	0.2	%		93.7	88.4	93.6	90.5	94.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP19 0.2-0.4	TP20 0.1-0.3	TP21 0.1-0.3	TP21 0.8-0.9	TP21 1.4-1.5
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-058	ES1729844-060	ES1729844-062	ES1729844-063	ES1729844-064
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.3	7.9	9.7	8.4	17.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Sample weight (dry)	----	0.01	g		14.0	27.3	24.6	19.2	----
APPROVED IDENTIFIER:	----	-	--		G.MORGAN	G.MORGAN	G.MORGAN	G.MORGAN	----
EA200N: Asbestos Quantification (non-NATA)									
∅ Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		----	----	<0.0004	<0.0004	----
∅ Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		----	----	<0.001	<0.001	----
∅ Asbestos Containing Material	1332-21-4	0.1	g		----	----	<0.1	<0.1	----
∅ Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		----	----	<0.01	<0.01	----
∅ Weight Used for % Calculation	----	0.0001	kg		----	----	0.0246	0.0192	----
∅ Fibrous Asbestos >7mm	----	0.0004	g		----	----	<0.0004	<0.0004	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	16	12	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	6	<1	<1
Chromium	7440-47-3	2	mg/kg		20	9	40	36	12
Copper	7440-50-8	5	mg/kg		21	11	371	76	16
Lead	7439-92-1	5	mg/kg		135	35	557	222	20
Nickel	7440-02-0	2	mg/kg		14	6	84	29	6
Zinc	7440-66-6	5	mg/kg		80	37	4120	648	37
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.3	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP19 0.2-0.4	TP20 0.1-0.3	TP21 0.1-0.3	TP21 0.8-0.9	TP21 1.4-1.5
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-058	ES1729844-060	ES1729844-062	ES1729844-063	ES1729844-064
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<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	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<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	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<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	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<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	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP19 0.2-0.4	TP20 0.1-0.3	TP21 0.1-0.3	TP21 0.8-0.9	TP21 1.4-1.5
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-058	ES1729844-060	ES1729844-062	ES1729844-063	ES1729844-064
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		86.7	89.2	84.3	85.0	91.8
2-Chlorophenol-D4	93951-73-6	0.5	%		84.9	87.9	81.4	83.3	91.8
2,4,6-Tribromophenol	118-79-6	0.5	%		55.4	66.2	52.9	55.8	75.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.2	87.7	85.5	86.2	87.7
Anthracene-d10	1719-06-8	0.5	%		83.5	84.9	82.0	83.6	85.3
4-Terphenyl-d14	1718-51-0	0.5	%		83.9	84.3	83.0	83.8	85.3
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		100	104	108	117	109
Toluene-D8	2037-26-5	0.2	%		103	106	109	119	110
4-Bromofluorobenzene	460-00-4	0.2	%		104	104	104	115	107



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP22 0.2-0.3	TP23 0.2-0.3	TP23 1.0-1.2	TP24 0.2-0.4	TP25 0.1-0.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-066	ES1729844-069	ES1729844-070	ES1729844-072	ES1729844-074
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		6.6	4.7	9.4	11.1	8.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	----	----	----
Asbestos Type	1332-21-4	-	--		-	-	----	----	----
Sample weight (dry)	----	0.01	g		21.9	16.3	----	----	----
APPROVED IDENTIFIER:	----	-	--		S.SPOONER	S.SPOONER	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		12	7	<5	5	5
Cadmium	7440-43-9	1	mg/kg		6	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		56	30	36	18	12
Copper	7440-50-8	5	mg/kg		258	24	27	19	18
Lead	7439-92-1	5	mg/kg		866	21	22	18	15
Nickel	7440-02-0	2	mg/kg		49	32	33	14	8
Zinc	7440-66-6	5	mg/kg		3950	73	71	48	31
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.4	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	0.6	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	0.9	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	2.9	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	5.2	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	1.6	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	2.3	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	6.4	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	2.1	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	5.7	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	4.2	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	0.8	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP22 0.2-0.3	TP23 0.2-0.3	TP23 1.0-1.2	TP24 0.2-0.4	TP25 0.1-0.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-066	ES1729844-069	ES1729844-070	ES1729844-072	ES1729844-074
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	5.7	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	38.4	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	8.0	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	8.0	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	8.0	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	780	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	1180	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	1960	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	1600	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	850	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	2450	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		85.4	89.1	88.6	88.9	86.7
2-Chlorophenol-D4	93951-73-6	0.5	%		83.5	88.2	88.1	89.5	85.6
2,4,6-Tribromophenol	118-79-6	0.5	%		59.1	71.0	76.2	79.2	74.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP22 0.2-0.3	TP23 0.2-0.3	TP23 1.0-1.2	TP24 0.2-0.4	TP25 0.1-0.3
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-066	ES1729844-069	ES1729844-070	ES1729844-072	ES1729844-074
				Result	Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		85.0	86.9	86.0	87.0	82.8
Anthracene-d10	1719-06-8	0.5	%		80.5	85.0	83.3	84.9	80.4
4-Terphenyl-d14	1718-51-0	0.5	%		80.4	84.2	81.5	83.6	79.0
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		106	101	104	98.5	99.3
Toluene-D8	2037-26-5	0.2	%		105	102	105	98.4	100
4-Bromofluorobenzene	460-00-4	0.2	%		99.3	98.3	99.0	94.7	95.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS1	SS2	SS3	SS4	FD2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-076	ES1729844-077	ES1729844-078	ES1729844-079	ES1729844-080
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		<1.0	1.2	9.3	26.2	6.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	6	5	11
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	6
Chromium	7440-47-3	2	mg/kg		3	4	18	16	53
Copper	7440-50-8	5	mg/kg		10	13	16	93	249
Lead	7439-92-1	5	mg/kg		9	16	20	24	799
Nickel	7440-02-0	2	mg/kg		3	3	7	11	46
Zinc	7440-66-6	5	mg/kg		42	31	24	95	4050
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		1.8	0.1	<0.1	0.4	0.4
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<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	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<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	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<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	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS1	SS2	SS3	SS4	FD2
Client sampling date / time				22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	ES1729844-076	ES1729844-077	ES1729844-078	ES1729844-079	ES1729844-080	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	140	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	140	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	200	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	200	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
MM802: E.coli and Coliforms by Colilert									
Total Coliforms (Colilert)	----	10	orgs/g	<10	870	----	1100	----	
MM804: E.coli and Thermotolerant Coliforms by MPN									
Escherichia coli	----	2	orgs/g	<3	<3	----	<4	----	
Faecal Coliforms	----	2	orgs/g	76	22	----	1400	----	
MM812: Heterotrophic (Total) Plate Count									
ø Heterotrophic Plate Count (22°C)	----	10	orgs/g	81000	86000	----	4700	----	
ø Heterotrophic Plate Count (25°C)	----	10	orgs/g	50000	91000	----	6600	----	
MM817: Faecal Streptococci and Enterococci									
ø Faecal Streptococci	----	1	orgs/g	<3	1100	----	<4	----	
MM823: Salmonella (absence / presence)									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS1	SS2	SS3	SS4	FD2
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-076	ES1729844-077	ES1729844-078	ES1729844-079	ES1729844-080
					Result	Result	Result	Result	Result
MM823: Salmonella (absence / presence) - Continued									
Salmonella spp.	----	-	-		Not Detected	Not Detected	----	Not Detected	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		90.6	92.0	87.4	85.7	90.7
2-Chlorophenol-D4	93951-73-6	0.5	%		90.6	91.8	86.6	83.3	88.7
2,4,6-Tribromophenol	118-79-6	0.5	%		76.0	75.5	69.1	70.7	68.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.2	87.9	84.3	84.6	89.1
Anthracene-d10	1719-06-8	0.5	%		85.6	86.0	81.6	82.9	85.9
4-Terphenyl-d14	1718-51-0	0.5	%		83.5	84.7	80.8	82.8	86.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		107	105	98.5	94.2	104
Toluene-D8	2037-26-5	0.2	%		106	107	97.8	94.1	103
4-Bromofluorobenzene	460-00-4	0.2	%		99.7	100	93.9	88.9	95.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS5	SS6	----	----	----
Client sampling date / time					23-Nov-2017 00:00	22-Nov-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1729844-081	ES1729844-082	-----	-----	-----
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.7	11.6	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	7	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		20	19	----	----	----
Copper	7440-50-8	5	mg/kg		21	25	----	----	----
Lead	7439-92-1	5	mg/kg		87	28	----	----	----
Nickel	7440-02-0	2	mg/kg		10	10	----	----	----
Zinc	7440-66-6	5	mg/kg		95	47	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
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	----	----	----
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)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	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS5	SS6	----	----	----
Client sampling date / time					23-Nov-2017 00:00	22-Nov-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1729844-081	ES1729844-082	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
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									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	----	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	----	----	----
EP080: BTEXN									
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	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		88.8	82.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		87.2	79.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		68.7	69.5	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.3	80.0	----	----	----
Anthracene-d10	1719-06-8	0.5	%		86.3	80.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		85.2	80.7	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		103	100	----	----	----
Toluene-D8	2037-26-5	0.2	%		102	98.6	----	----	----

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 Work Order : ES1729844
 Client : ENVIRONMENTAL EARTH SCIENCES
 Project : 117102



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS5	SS6	----	----	----
				Client sampling date / time	23-Nov-2017 00:00	22-Nov-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1729844-081	ES1729844-082	-----	-----	-----
					Result	Result	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		95.6	94.3	----	----	----



Analytical Results

Sub-Matrix: **SOLID**
 (Matrix: **SOLID**)

Client sample ID

				PACM1	PACM3	PACM2	PACM4	PACM5
Client sampling date / time				22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	ES1729844-005	ES1729844-041	ES1729844-042	ES1729844-065	ES1729844-068
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	Yes	Yes	Yes	-
Asbestos Type	1332-21-4	-	--	Ch	Ch + Am + Cr	Ch + Am + Cr	Ch	-
Unknown Mineral Fibre	----	0.1	g/kg	----	----	----	----	Yes
Sample weight (dry)	----	0.01	g	182	48.7	60.8	20.6	6.13
APPROVED IDENTIFIER:	----	-	--	G.MORGAN	G.MORGAN	G.MORGAN	G.MORGAN	G.MORGAN



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TP3	WS1	WS2	WS4	FD1
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	23-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-016	ES1729844-083	ES1729844-084	ES1729844-086	ES1729844-087
					Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup									
C10 - C14 Fraction	----	50	µg/L		----	480	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	830	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	1310	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	100	µg/L		----	820	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	470	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	1290	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	820	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L			<20	----	<20	<20
C10 - C14 Fraction	----	50	µg/L			45600	----	<50	<50
C15 - C28 Fraction	----	100	µg/L			74300	----	<100	140
C29 - C36 Fraction	----	50	µg/L			2800	----	<50	120
^ C10 - C36 Fraction (sum)	----	50	µg/L			123000	----	<50	260
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L			340	<20	----	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L			260	<20	----	<20
>C10 - C16 Fraction	----	100	µg/L			72700	2000	----	<100
>C16 - C34 Fraction	----	100	µg/L			47600	1400	----	<100
>C34 - C40 Fraction	----	100	µg/L			1950	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L			122000	3400	----	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L			72600	2000	----	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L			<1	<1	----	<1
Toluene	108-88-3	2	µg/L			11	<2	----	<2
Ethylbenzene	100-41-4	2	µg/L			6	<2	----	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L			47	<2	----	<2
ortho-Xylene	95-47-6	2	µg/L			15	<2	----	<2
^ Total Xylenes	1330-20-7	2	µg/L			62	<2	----	<2
^ Sum of BTEX	----	1	µg/L			79	<1	----	<1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TP3	WS1	WS2	WS4	FD1
Client sampling date / time					22-Nov-2017 00:00	22-Nov-2017 00:00	22-Nov-2017 00:00	23-Nov-2017 00:00	22-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729844-016	ES1729844-083	ES1729844-084	ES1729844-086	ES1729844-087
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		48	<5	----	<5	<5
MM625: Salmonella - VIDAS (absence / presence)									
Salmonella spp.	----	-	-		----	Not Detected	Not Detected	----	----
MW002: Heterotrophic Plate Count									
Heterotrophic Plate Count (22°C)	----	1	CFU/mL		----	2800	~3400	----	----
Heterotrophic Plate Count (36°C)	----	1	CFU/mL		----	1600	2500	----	----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL		----	~8	<2	----	----
Escherichia coli	----	1	CFU/100mL		----	~8	<2	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		----	~6	~3	----	----
MW013: Faecal Streptococci by MF									
Faecal Streptococci	----	1	CFU/100mL		----	32	~2	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		99.3	97.0	----	98.6	103
Toluene-D8	2037-26-5	2	%		95.1	104	----	102	104
4-Bromofluorobenzene	460-00-4	2	%		92.0	102	----	99.9	103



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP1 0.1-0.2 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP4 0-0.2 - 22-Nov-2017 00:00	Mid grey sandy soil.
EA200: Description	TP6 0.2-0.3 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP7 0.1-0.2 - 22-Nov-2017 00:00	Mid grey sandy soil.
EA200: Description	TP8 0.8-1.0 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP9 0.1-0.3 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP11 0.1-0.3 - 22-Nov-2017 00:00	Mid brown clay soil.
EA200: Description	TP18 0-0.1 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP19 0.2-0.4 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP20 0.1-0.3 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP21 0.1-0.3 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP21 0.8-0.9 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP22 0.2-0.3 - 22-Nov-2017 00:00	Mid brown sandy soil.
EA200: Description	TP23 0.2-0.3 - 22-Nov-2017 00:00	Mid brown clay soil.

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	PACM1 - 22-Nov-2017 00:00	One piece of asbestos cement sheeting approximately 230 x 80 x 8mm.
EA200: Description	PACM3 - 22-Nov-2017 00:00	One piece of asbestos cement sheeting approximately 80 x 40 x 5mm.
EA200: Description	PACM2 - 22-Nov-2017 00:00	One piece of asbestos cement sheeting approximately 90 x 70 x 8mm.
EA200: Description	PACM4 - 22-Nov-2017 00:00	One piece of asbestos cement sheeting approximately 60 x 40 x 7mm.
EA200: Description	PACM5 - 22-Nov-2017 00:00	One piece of unknown mineral fibre sheeting approximately 45 x 30 x 4mm.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

APPENDIX F2 – LABORATORY CERTIFICATION EASTERN PORTION

SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental & Earth Sciences
Attention	Lachlan Desailly, Chris Newland

Sample Login Details

Your reference	118069, Eastern Creek
Envirolab Reference	195714
Date Sample Received	06/07/2018
Date Instructions Received	06/07/2018
Date Results Expected to be Reported	13/07/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	81 soil, 3 water, 3 material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14.3
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Micro testings need to be confirmed

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolab.com.au	Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides	Acid Extractable metals in soil	Asbestos ID - soils	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - total	Microbiological Testing	Asbestos ID - materials	On Hold
TP1-1	✓	✓	✓	✓	✓	✓								
TP2-1	✓	✓	✓	✓	✓	✓								
TP2-1	✓	✓	✓	✓	✓	✓								
TP3-1	✓	✓	✓	✓	✓	✓								
TP4-1	✓	✓	✓	✓	✓	✓								
TP5-1	✓	✓	✓	✓	✓	✓								
TP6-1	✓	✓	✓	✓	✓	✓	✓							
TP6-2														✓
STP1-1	✓	✓	✓	✓	✓	✓	✓							
STP1-2														✓
STP2-1	✓	✓	✓	✓	✓	✓	✓							
STP2-2	✓	✓	✓	✓	✓	✓	✓							
STP3-1														✓
STP3-2	✓	✓	✓	✓	✓	✓								
STP4-1	✓	✓	✓	✓	✓	✓	✓							
DTP1-1														✓
DTP1-2														✓
DTP2-1	✓	✓	✓	✓	✓	✓								
DTP3-1														✓
DTP4-1	✓	✓	✓	✓	✓	✓								
FD1	✓	✓	✓	✓	✓	✓								
FD2														✓
FD3	✓	✓	✓	✓	✓	✓								
PACM1													✓	
PACM2													✓	
PACM3													✓	
DAM1								✓	✓	✓	✓			
DAM2								✓	✓	✓	✓			
SBH1	✓	✓	✓	✓	✓	✓	✓							
SBH2	✓	✓	✓	✓	✓	✓	✓							
SBH3	✓	✓	✓	✓	✓	✓	✓							
SBH4	✓	✓	✓	✓	✓	✓	✓							



EnviroLab Services Pty Ltd

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides	Acid Extractable metals in soil	Asbestos ID - soils	VTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - total	Microbiological Testing	Asbestos ID - materials	On Hold
SBH5	✓	✓	✓	✓	✓	✓	✓							
SBH6	✓	✓	✓	✓	✓	✓	✓							
SBH7	✓	✓	✓	✓	✓	✓	✓							
COMP1-1														✓
COMP1-2														✓
COMP1-3														✓
COMP1-4														✓
COMP2-1														✓
COMP2-2														✓
COMP2-3														✓
COMP2-4														✓
COMP3-1														✓
COMP3-2														✓
COMP3-3														✓
COMP3-4														✓
COMP4-1														✓
COMP4-2														✓
COMP4-3														✓
COMP4-4														✓
COMP5-1														✓
COMP5-2														✓
COMP5-3														✓
COMP5-4														✓
COMP6-1														✓
COMP6-2														✓
COMP6-3														✓
COMP6-4														✓
COMP7-1														✓
COMP7-2														✓
COMP7-3														✓
COMP7-4														✓
COMP8-1														✓

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides	Acid Extractable metals in soil	Asbestos ID - soils	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - total	Microbiological Testing	Asbestos ID - materials	On Hold
COMP8-2														✓
COMP8-3														✓
COMP8-4														✓
COMP9-1														✓
COMP9-2														✓
COMP9-3														✓
COMP9-4														✓
BH1	✓	✓	✓	✓	✓	✓								
BH2	✓	✓	✓	✓	✓	✓								
BH3	✓	✓	✓	✓	✓	✓								
BH4	✓	✓	✓	✓	✓	✓								
BH5	✓	✓	✓	✓	✓	✓								
BH6	✓	✓	✓	✓	✓	✓								
BH7	✓	✓	✓	✓	✓	✓								
Comp 1	✓	✓	✓	✓	✓	✓								
Comp 2	✓	✓	✓	✓	✓	✓								
Comp 3	✓	✓	✓	✓	✓	✓								
Comp 4	✓	✓	✓	✓	✓	✓								
Comp 5	✓	✓	✓	✓	✓	✓								
Comp 6	✓	✓	✓	✓	✓	✓								
Comp 7	✓	✓	✓	✓	✓	✓								
Comp 8	✓	✓	✓	✓	✓	✓								
Comp 9	✓	✓	✓	✓	✓	✓								

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

CERTIFICATE OF ANALYSIS 195714

Client Details

Client	Environmental & Earth Sciences
Attention	Lachlan Desailly, Chris Newland
Address	PO Box 380, North Sydney, NSW, 2059

Sample Details

Your Reference	<u>118069, Eastern Creek</u>
Number of Samples	81 soil, 3 water, 3 material
Date samples received	06/07/2018
Date completed instructions received	06/07/2018

Analysis Details

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

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

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

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

Report Details

Date results requested by	13/07/2018
Date of Issue	12/07/2018
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Lucy Zhu
 Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Dragana Tomas, Senior Chemist
 Jaimie Loa-Kum-Cheung, Senior Chemist
 Long Pham, Team Leader, Metals
 Lucy Zhu, Asbestos Analyst
 Nancy Zhang, Assistant Lab Manager
 Steven Luong, Senior Chemist

Authorised By



Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference	UNITS	TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	87	84	83	88	85

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference	UNITS	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	88	84	89	86	91

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	87	85	84	91

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	84	90	91	86

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	89	86	89	86

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	86	87	88	88

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	86	89	89	84

vTRH(C6-C10)/BTEXN in Soil

Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	85	80	82

svTRH (C10-C40) in Soil						
Our Reference	UNITS	195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference		TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	130	97	98	100	100

svTRH (C10-C40) in Soil						
Our Reference	UNITS	195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference		TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	98	102	99	99	100

svTRH (C10-C40) in Soil

Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	100	100	100	100	100

svTRH (C10-C40) in Soil

Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	130	<100	150
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	120	<100	130
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	220	<100	250
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	220	<50	250
Surrogate o-Terphenyl	%	100	101	101	102	101

svTRH (C10-C40) in Soil

Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	230	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	190	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	370	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	370	<50	<50	<50	<50
Surrogate o-Terphenyl	%	105	99	100	102	100

svTRH (C10-C40) in Soil

Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	102	101	101	100	100

svTRH (C10-C40) in Soil

Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	101	100	100	101	98

svTRH (C10-C40) in Soil

Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	100	100	102	100

PAHs in Soil						
Our Reference		195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference	UNITS	TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.1	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	92	89	93	87	89

PAHs in Soil						
Our Reference		195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference	UNITS	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.1	0.1	0.2
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.06	<0.05	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Total +ve PAH's	mg/kg	<0.05	<0.05	0.3	0.1	1.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	93	93	93	89	93

PAHs in Soil						
Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.1	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	93	91	92	94	92

PAHs in Soil						
Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	0.3	0.1	0.2
Acenaphthylene	mg/kg	<0.1	<0.1	0.8	0.4	0.9
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	0.2	<0.1	0.2
Phenanthrene	mg/kg	<0.1	0.3	4.1	1.7	4.8
Anthracene	mg/kg	<0.1	<0.1	1.0	0.3	1.1
Fluoranthene	mg/kg	<0.1	0.7	10	3.8	12
Pyrene	mg/kg	<0.1	0.6	11	3.9	13
Benzo(a)anthracene	mg/kg	<0.1	0.2	6.5	2.0	7.5
Chrysene	mg/kg	<0.1	0.3	4.7	1.8	5.8
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.6	9.8	3.5	12
Benzo(a)pyrene	mg/kg	<0.05	0.3	6.5	2.3	8.3
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	2.8	1.0	3.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.6	0.2	0.7
Benzo(g,h,i)perylene	mg/kg	<0.1	0.3	3.4	1.3	4.1
Total +ve PAH's	mg/kg	<0.05	3.6	62	22	74
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	9.1	3.2	11
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	9.1	3.2	11
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.5	9.1	3.2	11
Surrogate p-Terphenyl-d14	%	93	97	98	97	98

PAHs in Soil						
Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	1.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	6.6	0.2	0.1	0.1	<0.1
Anthracene	mg/kg	1.7	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	18	0.5	0.4	0.3	0.3
Pyrene	mg/kg	19	0.5	0.5	0.2	0.2
Benzo(a)anthracene	mg/kg	12	0.3	0.2	0.1	0.1
Chrysene	mg/kg	8.6	0.3	0.3	0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	16	0.5	0.5	0.3	0.3
Benzo(a)pyrene	mg/kg	11	0.3	0.3	0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	4.5	0.2	0.2	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.9	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	5.3	0.2	0.2	0.2	0.1
Total +ve PAH's	mg/kg	110	2.9	2.7	1.6	1.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	16	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	16	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	16	0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	95	94	98	98

PAHs in Soil						
Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.1	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	1.5	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	95	96	93	94	94

PAHs in Soil						
Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	96	93	91	92

PAHs in Soil					
Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.5	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.5	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	2.4	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	95	92	97	96

Organochlorine Pesticides in soil						
Our Reference		195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference	UNITS	TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	115	116	114	123	110

Organochlorine Pesticides in soil

Our Reference		195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference	UNITS	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	129	121	115	115	109

Organochlorine Pesticides in soil						
Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	114	116	126	115	113

Organochlorine Pesticides in soil

Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	117	115	114	114	118

Organochlorine Pesticides in soil

Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	117	119	114	119	112

Organochlorine Pesticides in soil						
Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	122	110	107	117	109

Organochlorine Pesticides in soil

Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	112	112	111	117

Organochlorine Pesticides in soil					
Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	116	108

Organophosphorus Pesticides						
Our Reference		195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference	UNITS	TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	115	116	114	123	110

Organophosphorus Pesticides						
Our Reference		195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference	UNITS	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	129	121	115	115	109

Organophosphorus Pesticides

Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	114	116	126	115	113

Organophosphorus Pesticides

Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	117	115	114	114	118

Organophosphorus Pesticides

Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	117	119	114	119	112

Organophosphorus Pesticides

Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	122	110	107	117	109

Organophosphorus Pesticides

Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	112	112	111	117

Organophosphorus Pesticides

Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date extracted	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	116	108

Acid Extractable metals in soil

Our Reference		195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference	UNITS	TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	5	<4	5	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	9	9	9	8
Copper	mg/kg	19	25	39	30	30
Lead	mg/kg	25	31	17	12	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	10	18	15	12
Zinc	mg/kg	68	58	62	52	43

Acid Extractable metals in soil

Our Reference		195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference	UNITS	TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	<4	6	5	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	10	15	22	14
Copper	mg/kg	26	15	23	21	23
Lead	mg/kg	13	17	15	19	24
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	8	11	11	15
Zinc	mg/kg	43	48	42	49	38

Acid Extractable metals in soil

Our Reference		195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference	UNITS	STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	<4	5	5	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	18	13	13	8
Copper	mg/kg	85	30	24	25	42
Lead	mg/kg	9	41	14	16	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	20	12	12	17
Zinc	mg/kg	36	50	40	39	53

Acid Extractable metals in soil

Our Reference		195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference	UNITS	FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	<4	5	6	6	7
Cadmium	mg/kg	<0.4	<0.4	0.8	<0.4	0.8
Chromium	mg/kg	10	15	23	17	21
Copper	mg/kg	10	27	65	24	49
Lead	mg/kg	11	27	280	130	210
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	0.2
Nickel	mg/kg	5	18	18	7	12
Zinc	mg/kg	13	48	360	130	340

Acid Extractable metals in soil

Our Reference		195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference	UNITS	SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	6	<4	6	<4	9
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	21	14	19	12	16
Copper	mg/kg	72	12	12	17	11
Lead	mg/kg	160	24	42	16	15
Mercury	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	6	4	10	8
Zinc	mg/kg	270	17	41	37	30

Acid Extractable metals in soil

Our Reference		195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	5	6	4	<4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	15	17	10	13
Copper	mg/kg	11	26	11	10	18
Lead	mg/kg	18	19	13	11	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	16	5	6	7
Zinc	mg/kg	28	48	12	13	36

Acid Extractable metals in soil

Our Reference		195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference	UNITS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	4	5	5	6	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	16	15	17	10
Copper	mg/kg	26	7	8	17	6
Lead	mg/kg	17	14	22	17	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	5	5	8	5
Zinc	mg/kg	59	11	16	23	10

Acid Extractable metals in soil

Our Reference		195714-84	195714-85	195714-86	195714-87
Your Reference	UNITS	Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Arsenic	mg/kg	5	4	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	15	17	16
Copper	mg/kg	27	10	14	18
Lead	mg/kg	19	26	19	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	16	6	6	7
Zinc	mg/kg	47	18	29	28

Moisture						
Our Reference	UNITS	195714-1	195714-2	195714-3	195714-4	195714-5
Your Reference		TP1-1	TP2-1	TP2-1	TP3-1	TP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	8.4	12	14	10	13

Moisture						
Our Reference	UNITS	195714-6	195714-7	195714-9	195714-11	195714-12
Your Reference		TP5-1	TP6-1	STP1-1	STP2-1	STP2-2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	14	9.1	10	11	7.7

Moisture						
Our Reference	UNITS	195714-14	195714-15	195714-18	195714-20	195714-21
Your Reference		STP3-2	STP4-1	DTP2-1	DTP4-1	FD1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	5.9	12	13	12	12

Moisture						
Our Reference	UNITS	195714-23	195714-29	195714-30	195714-31	195714-32
Your Reference		FD3	SBH1	SBH2	SBH3	SBH4
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	7.4	12	14	12	14

Moisture						
Our Reference	UNITS	195714-33	195714-34	195714-35	195714-72	195714-73
Your Reference		SBH5	SBH6	SBH7	BH1	BH2
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	14	14	16	9.2	9.3

Moisture						
Our Reference	UNITS	195714-74	195714-75	195714-76	195714-77	195714-78
Your Reference		BH3	BH4	BH5	BH6	BH7
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	9.0	10	13	9.4	15

Moisture						
Our Reference	UNITS	195714-79	195714-80	195714-81	195714-82	195714-83
Your Reference		Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Composite Reference		36,37,38,39	40,41,42,43	44,45,46,47	48,49,50,51	52,53,54,55
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	30	18	12	21	13

Moisture					
Our Reference	UNITS	195714-84	195714-85	195714-86	195714-87
Your Reference		Comp 6	Comp 7	Comp 8	Comp 9
Composite Reference		56,57,58,59	,60,61,62,63	64,65,66,67	68,69,70,71
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil
Date prepared	-	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Moisture	%	14	13	20	20

Asbestos ID - soils						
Our Reference	UNITS	195714-7	195714-9	195714-11	195714-12	195714-15
Your Reference		TP6-1	STP1-1	STP2-1	STP2-2	STP4-1
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	11/07/2018	11/07/2018	11/07/2018	11/07/2018	11/07/2018
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 30g	Approx. 40g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils

Our Reference		195714-29	195714-30	195714-31	195714-32	195714-33
Your Reference	UNITS	SBH1	SBH2	SBH3	SBH4	SBH5
Composite Reference		-	-	-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	11/07/2018	11/07/2018	11/07/2018	11/07/2018	11/07/2018
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 25g	Approx. 25g
Sample Description	-	Brown clayey soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils

Our Reference		195714-34	195714-35
Your Reference	UNITS	SBH6	SBH7
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		soil	soil
Date analysed	-	11/07/2018	11/07/2018
Sample mass tested	g	Approx. 30g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

vTRH(C6-C10)/BTEXN in Water			
Our Reference	UNITS	195714-27	195714-28
Your Reference		DAM1	DAM2
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		water	water
Date extracted	-	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018
TRH C ₆ - C ₉	µg/L	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	96	96
Surrogate toluene-d8	%	92	93
Surrogate 4-BFB	%	92	94

svTRH (C10-C40) in Water			
Our Reference	UNITS	195714-27	195714-28
Your Reference		DAM1	DAM2
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		water	water
Date extracted	-	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	µg/L	<50	79
TRH C ₁₅ - C ₂₈	µg/L	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100
Surrogate o-Terphenyl	%	91	105

PAHs in Water			
Our Reference		195714-27	195714-28
Your Reference	UNITS	DAM1	DAM2
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		water	water
Date extracted	-	09/07/2018	09/07/2018
Date analysed	-	10/07/2018	10/07/2018
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	98	98

HM in water - total			
Our Reference		195714-27	195714-28
Your Reference	UNITS	DAM1	DAM2
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		water	water
Date prepared	-	09/07/2018	09/07/2018
Date analysed	-	09/07/2018	09/07/2018
Arsenic-Total	µg/L	1	1
Cadmium-Total	µg/L	<0.1	<0.1
Chromium-Total	µg/L	1	<1
Copper-Total	µg/L	3	<1
Lead-Total	µg/L	1	<1
Mercury-Total	µg/L	<0.05	<0.05
Nickel-Total	µg/L	1	<1
Zinc-Total	µg/L	10	2

Microbiological Testing			
Our Reference		195714-27	195714-28
Your Reference	UNITS	DAM1	DAM2
Composite Reference		-	-
Date Sampled		29/06/2018	29/06/2018
Type of sample		water	water
Date of testing	-	10/07/2018	10/07/2018
E. coli	cfu/100mL	440	<1
Faecal Coliforms	cfu/100mL	440	<1
22° C Plate Count	cfu/mL	2,000	910

Asbestos ID - materials				
Our Reference	UNITS	195714-24	195714-25	195714-26
Your Reference		PACM1	PACM2	PACM3
Composite Reference		-	-	-
Date Sampled		29/06/2018	29/06/2018	29/06/2018
Type of sample		material	material	material
Date analysed	-	11/07/2018	11/07/2018	11/07/2018
Mass / Dimension of Sample	-	55x30x4mm	40x40x4mm	80x45x5mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	Beige layered fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected	Chrysotile asbestos detected	No asbestos detected
		Amosite asbestos detected	Amosite asbestos detected	Organic fibres detected
		Crocidolite asbestos detected	Crocidolite asbestos detected	

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date extracted	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			10/07/2018	1	10/07/2018	10/07/2018		10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	85	78
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	85	78
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	78	71
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	77	72
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	86	79
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	92	85
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	85	78
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	89	1	87	84	4	91	83

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date extracted	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	10/07/2018	10/07/2018		10/07/2018	10/07/2018
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	11	<25	<25	0	85	84
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	11	<25	<25	0	85	84
Benzene	mg/kg	0.2	Org-016	[NT]	11	<0.2	<0.2	0	79	77
Toluene	mg/kg	0.5	Org-016	[NT]	11	<0.5	<0.5	0	79	76
Ethylbenzene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	86	85
m+p-xylene	mg/kg	2	Org-016	[NT]	11	<2	<2	0	91	91
o-Xylene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	84	84
naphthalene	mg/kg	1	Org-014	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	11	86	89	3	89	92

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	10/07/2018	10/07/2018		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	21	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	21	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	21	91	86	6	[NT]	[NT]

Client Reference: 118069, Eastern Creek

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	10/07/2018	10/07/2018		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	72	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	72	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	72	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	72	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	72	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	72	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	72	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	72	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	72	89	88	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date extracted	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			10/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	130	111
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	124	100
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	92	85
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	130	111
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	124	100
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	92	85
Surrogate o-Terphenyl	%		Org-003	103	1	130	101	25	130	97

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date extracted	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	09/07/2018	09/07/2018		10/07/2018	10/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	11	<50	<50	0	114	107
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	11	<100	<100	0	100	90
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	11	<100	<100	0	108	83
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	11	<50	<50	0	114	107
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	11	<100	<100	0	100	90
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	11	<100	<100	0	108	83
Surrogate o-Terphenyl	%		Org-003	[NT]	11	99	101	2	109	100

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	21	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	21	100	100	0	[NT]	[NT]

Client Reference: 118069, Eastern Creek

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	10/07/2018	10/07/2018		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	72	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	72	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	72	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	72	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	72	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	72	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	72	102	100	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date extracted	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			10/07/2018	1	10/07/2018	10/07/2018		10/07/2018	10/07/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	114	98
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	119	93
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	104	94
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	106	96
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	111	102
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	97	90
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	105	98
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	97	1	92	92	0	122	116

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date extracted	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	10/07/2018	10/07/2018		10/07/2018	10/07/2018
Naphthalene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	112	98
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	116	92
Phenanthrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	102	93
Anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	11	0.1	0.1	0	105	97
Pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	0.1	0	110	103
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	98	90
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	11	<0.05	<0.05	0	105	98
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	11	89	93	4	125	121

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	10/07/2018	10/07/2018		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	21	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	21	92	91	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	10/07/2018	10/07/2018		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	72	0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	72	0.3	0.2	40	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	72	0.2	0.2	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	72	0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	72	0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	72	0.3	0.2	40	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	72	0.1	0.08	22	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	72	0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	72	0.2	0.1	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	72	98	97	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date extracted	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	92
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	75	75
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	89	90
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	90
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	93
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	95
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	106
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	90
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	100
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	83	86
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	120	1	115	110	4	109	108

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date extracted	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	10/07/2018
HCB	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	94	95
gamma-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	78	75
Heptachlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	89	91
delta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	94	91
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	92	95
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	100	96
Dieldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	109	108
Endrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	93	91
pp-DDD	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	100	101
Endosulfan II	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	81	89
Methoxychlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	11	115	115	0	113	110

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	21	113	108	5	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	10/07/2018	10/07/2018		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	72	119	122	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date extracted	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	83	83
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	84	85
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	89	91
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	79	94
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	75	82
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	87	84
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	91	90
Surrogate TCMX	%		Org-008	120	1	115	110	4	123	113

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date extracted	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	10/07/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	81	80
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	77	75
Dimethoate	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	84	85
Fenitrothion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	82	87
Malathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	73	86
Parathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	83	82
Ronnel	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	88	89
Surrogate TCMX	%		Org-008	[NT]	11	115	115	0	123	118

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	21	113	108	5	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate		Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	10/07/2018	10/07/2018		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	72	119	122	2	[NT]	[NT]

Client Reference: 118069, Eastern Creek

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	195714-2
Date prepared	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			09/07/2018	1	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Arsenic	mg/kg	4	Metals-020	<4	1	5	5	0	94	82
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	94	88
Chromium	mg/kg	1	Metals-020	<1	1	15	14	7	96	88
Copper	mg/kg	1	Metals-020	<1	1	19	20	5	101	89
Lead	mg/kg	1	Metals-020	<1	1	25	21	17	88	71
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	108	111
Nickel	mg/kg	1	Metals-020	<1	1	12	12	0	90	83
Zinc	mg/kg	1	Metals-020	<1	1	68	54	23	93	70

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	195714-23
Date prepared	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Date analysed	-			[NT]	11	09/07/2018	09/07/2018		09/07/2018	09/07/2018
Arsenic	mg/kg	4	Metals-020	[NT]	11	6	5	18	94	80
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	93	90
Chromium	mg/kg	1	Metals-020	[NT]	11	22	15	38	96	91
Copper	mg/kg	1	Metals-020	[NT]	11	21	22	5	101	100
Lead	mg/kg	1	Metals-020	[NT]	11	19	19	0	87	79
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	116	110
Nickel	mg/kg	1	Metals-020	[NT]	11	11	11	0	90	88
Zinc	mg/kg	1	Metals-020	[NT]	11	49	44	11	92	89

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	21	09/07/2018	09/07/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	21	8	9	12	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	21	42	34	21	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	21	15	12	22	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	21	17	16	6	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	21	53	51	4	[NT]	[NT]

Client Reference: 118069, Eastern Creek

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Date analysed	-			[NT]	72	09/07/2018	09/07/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	72	<4	5	22	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	72	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	72	12	17	34	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	72	17	19	11	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	72	16	20	22	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	72	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	72	10	14	33	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	72	37	43	15	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/07/2018	[NT]	[NT]	[NT]	[NT]	09/07/2018	[NT]
Date analysed	-			10/07/2018	[NT]	[NT]	[NT]	[NT]	10/07/2018	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	111	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate toluene-d8	%		Org-016	90	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-BFB	%		Org-016	85	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/07/2018	[NT]	[NT]	[NT]	[NT]	09/07/2018	[NT]
Date analysed	-			10/07/2018	[NT]	[NT]	[NT]	[NT]	10/07/2018	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	122	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	128	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	122	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	128	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-003	92	[NT]	[NT]	[NT]	[NT]	119	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			09/07/2018	[NT]	[NT]	[NT]	[NT]	09/07/2018	[NT]
Date analysed	-			10/07/2018	[NT]	[NT]	[NT]	[NT]	10/07/2018	[NT]
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	100	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: HM in water - total					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			09/07/2018	[NT]	[NT]	[NT]	[NT]	09/07/2018	[NT]
Date analysed	-			09/07/2018	[NT]	[NT]	[NT]	[NT]	09/07/2018	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Lead-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples for asbestos testing were sub-sampled from jars provided by the client.

22C Plate Count, Faecal Coliform & E.Coli analysed by Sonic Food & Water Testing. Report No.W1813274.

22C Plate Count, Faecal Coliform & E.Coli analysed by Sonic Food & Water Testing. Report No.W1813273.

118069

Envirolab

LD

eastern creek

Sheet: 1 of 4

EVIDENCE
 CHATSWOOD NSW 2037
 PH: (02) 9940 6200
 Job No: 195714
 Date Received: 6/7
 Time Received: 1445
 Received by: PH
 Temp: Cool/Ambient
 Cooling: Ice/Repack
 Security: Intact/Broken/None

6

: EN/010/17

: cnewland@eesigroup.com

: ldesailly@eesigroup.com

accounts@eesigroup.com

Name
Lachlan Desailly

Signature
Sesally
01/01/01

Date: 6/7/18
6/7

Time
1445

ELS

PO Box: 380, North Sydney NSW 2059

**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 118069

Laboratory: envirolab

Project Manager: CN

Sampler: LD

Site Location: eastern creek

Sheet: 2 of 4

	No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Time sampled	Sample Matrix		fragment	Combo 5B	Asbestos pres/abs	Combo 3	biological suite	Analysis Required										HOLD	Sample-specific instructions/ notes
						Soil	Water																	
		195714																						
21	1	FD1		29/6/18		X			X															
22	6	FD2		2/7/18			X															X		
23	1	FD3		2/7/18		X			X													X		
24	1	PACM1		29/7/18				X		X														
25	1	" 2		"				X		X														
26	1	" 3		"				X		X														
27	6	Dam1		2/7/18			X				X	X												
28	6	Dam2		"			X				X	X												
29	1	SBH1				X			X	X														
30	1	" 2				X			X	X														
31	1	" 3				X			X	X														
32	1	" 4				X			X	X														
33	1	" 5							X	X														
34	1	" 6							X	X														
35	1	" 7							X	X														
36	1	Comp1-1	79						X															
37	1	" -2																						
38	1	" -3																						
39	1	" -4																						
		TOTAL							10	10	2	2												
																		Please composite 4 sub samples at 1 lab. Call "Com"						

Please composite 4 sub samples at lab. Call "Comp1"

Turn Around (circle):

Comments/ Instructions:

Lab Quotation No. (if applicable): EN/010/17

Send report to (email address): cnewland@eesigroup.com

Cc: report to (email address): Ldesaill

Cc: invoice to (email address): accounts@eesigroup.com

Sent off Site/Office by: Lachlan Desaill
Receiving Lab: ELS
Receiving Lab:

Signature: Desaill
Date: 6/7/18

Time: 1445

Phone: (02) 9922 1777
Fax: (02) 9922 1010
PO Box: 380, North Sydney NSW 2059
Email: eesNSW@eesigroup.com



Job No:

118069

Laboratory:

envirolab

Project Manager:

CN

Sampler:

LD

Site Location:

eastern creek

Sheet: 3 of 4

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Comments/ Instructions:

Send report to (email address): Cnewland@eesigroup.com

Cc: report to (email address): Ldesailly@eesigroup.com

Cc: invoice to (email address): accounts@eesigroup.com

Sent off Site/Office by:

Receiving Lab:

Receiving Lab:

Nate

Lachlan Desai
ELS

Signature

Desautels
J. A.

Date _____

$$\begin{array}{r} 67 \overline{) 6718} \\ \underline{67} \\ 0 \end{array}$$

Time

1445

Phone: (02) 9922 1777
Fax: (02) 9922 1010



**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

PO Box: 380, North Sydney NSW 2059

Email: eesNSW@eesigroup.com

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 118069

Laboratory: envirolab

Project Manager: CN

Sampler: LD

Site Location: eastern creek

Sheet: 4 of 4

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Time sampled	Sample Matrix			Analysis Required										Sample-specific instructions/ notes
					Soil	Water	Sediment											
	195714																	
60	1 Comp 7-1	85	2/7/18		X			X										composite @ lab ="comp 7"
61	1 " -2																	
62	1 " -3																	
63	1 " -4																	
64	1 Comp 8-1	86						X										composite @ lab ="comp 8"
65	1 " -2																	
66	1 " -3																	
67	1 " -4																	
68	1 Comp 9-1	87						X										composite @ lab ="comp 9"
69	1 " -2																	
70	1 " -3																	
71	1 " -4																	
72	1 BH 1							X										
73	1 " 2							X										
74	1 " 3							X										
75	1 " 4							X										
76	1 " 5							X										
77	1 " 6							X										
78	1 " 7							X										
	TOTAL							10										

Turn Around (circle):

Comments/ Instructions:

Lab Quotation No. (if applicable): EN/010/17

Send report to (email address): cnewland@eesigroup.com

Cc: report to (email address): Ldesailly@eesigroup.com

Cc: invoice to (email address): accounts@eesigroup.com

Sent off Site/Office by:

Name: Lachlan Desailly
ELS

Signature:

Desailly

Date:

6/7/18

Time:

1445

Receiving Lab:

Receiving Lab:

Phone: (02) 9922 1777
Fax: (02) 9922 1010

PO Box: 380, North Sydney NSW 2059

Email: eesNSW@eesigroup.com



ENVIRONMENTAL EARTH
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APPENDIX G1 - QA/QC WESTERN PORTION



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1 INTRODUCTION AND BACKGROUND

1.1 Introduction

The aim of quality control and quality assurance (QA/QC) is to deliver data that is:

- representative of what is sampled;
- precise;
- accurate; and
- reproducible.

As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this document is to evaluate and identify the data quality objectives (DQOs) and the data quality indicators (DQIs), which are used to assess whether the DQOs have been met.

All surface water, groundwater and soil sampling procedures to be followed are described in full in our *Soil, gas and groundwater sampling manual* (Environmental Earth Sciences Ltd 2009). This document should be referred to for field procedures for sampling and conveyance. Copies are available for inspection if required. The NSW guideline documents used in the evaluation of the data set for this investigation are:

- National Environment Protection Council (NEPC) (2013) - *National environment protection (assessment of site contamination) amended measure No.1* (NEPM, 2013).
- NSW Environment Protection Authority (EPA) (1995) - *Contaminated sites: Sampling design guidelines*.
- NSW Office of Environment and Heritage (OEH) (2011) - *Contaminated sites: Guidelines for consultants reporting on contaminated sites*.
- Standards Australia, 2005, Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, (AS 4482.1), Standards Australia, Sydney, NSW.
- Standards Australia, 1999, Guide to the investigation and sampling of sites with potentially contaminated soil, Part 2: Volatile substances, (AS 4482.2), Standards Australia, Homebush, NSW.

Data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. These are referred to as the PARCC parameters. The PARCC (and additional QA) parameters are discussed within this report. The following items form part of the QA/QC appendix:

- repeatability;
- precision;
- accuracy;
- representativeness;
- completeness;
- comparability;

- sensitivity;
- holding times;
- blanks; and
- procedures for anomalous samples and confirmation checking.

1.2 Background

The terms “quality assurance” and “quality control” are often confused. In any program, quality control is required before assurance can be put in place. With respect to laboratory analysis activities, these terms are defined as follows:

Quality Assurance (QA) is “a set of activities intended to establish confidence that quality requirements will be met” (AS/NZS ISO 9000:2005).

This encompasses all actions, procedures, checks and decisions undertaken to ensure the accuracy and reliability of analysis results. It includes routine procedures which ensure proper sample control, data transfer, instrument calibration, the decisions required to select and properly train staff, select equipment and analytical methods, and the day to day judgements resulting from regular scrutiny and maintenance of the laboratory system. Quality Control (QC) is “a set of activities intended to ensure that quality requirements are actually being met” (AS/NZS ISO 9000:2005). In other words, the operational techniques and activities that are used to fulfil the requirements for quality.

These are the components of QA which serve to monitor and measure the effectiveness of other QA procedures by comparison with previously decided objectives. They include measurement of the quality of reagents, cleanliness of apparatus, accuracy and precision of methods and instrumentation, and reliability of all of these factors as implemented in a given laboratory from day to day.

A complete discussion of either of these terms or the steps for implementing them is beyond the scope of this document. It is widely recognised, however, that adoption of sound laboratory QA and QC procedures is essential and readers are referred to documentation available from the National Association of Testing Authorities (NATA), if further information is required.

2 DATA QUALITY OBJECTIVES

The Data Quality Objectives (DQOs) process is a systematic approach used to define the type, quantity and quality of data supporting decisions which relate to the environmental condition of a site. Table 1 outlines the method data quality indicators (MDQIs) for the investigation.

TABLE 1 MEASUREMENT DATA QUALITY INDICATORS (MDQIS)

Parameter	Procedure	Minimum Frequency	Criteria	
			(5 to 10x LOR ⁴)	>10x LOR
Precision	Field Duplicates	1 in 20 - metals	<80 RPD	<50 RPD
		1 in 20 - semi-volatiles	<100 RPD	<80 RPD
		1 in 20 - volatiles	<150 RPD	<130 RPD
	Lab Replicate*	1 in 20	<50 RPD	<30 RPD
Accuracy*	Reference Material	1 in 10	60% to 140%R	80% to 120%R
	Matrix spikes			
	Surrogate spikes			
Representativeness*	Reagent Blanks	1 per batch	No detection	
	Holding Times*	Every sample	-	
Blanks**	Trip Blank	1 per batch	No detection	
	Rinsate Blanks			
Sensitivity	Limit of Reporting	Every sample	LOR < ½ site criteria	

Notes:

1. RPD – relative percentage difference
2. %R – percent recovery
3. LOR – limit of reporting
4. ⁴ no limit at <5x LOR
5. * the MDQI is usually specified in the standard method. If not, use the default values set out in this table
6. ** only necessary when measuring dissolved metals and volatile organic compounds in water samples

It should be noted that Standards Australia (AS4482.1) specify that typical MDQIs for precision should be ≤50% RPD, however also acknowledge that low concentrations and organic compounds in particular can be acceptably outside this range. The standard suggests that ≤50% RPD be used as a ‘trigger’ and values above this level of repeatability need to be noted and explained.

Our adopted MDQI’s for precision acknowledge the intrinsic heterogeneity of metal and semi-volatile chemical concentrations in disturbed soil that may potentially cause large variations in results between laboratory subsamples (although all efforts are made to homogenise non volatile duplicate samples). Similarly, large variations in volatile chemical concentrations between duplicates may be unavoidable even when using best practice sampling methodology, especially as we seek to minimise the disturbance to the sample while splitting it which means a high degree of inherent heterogeneity is expected.

As such, our adopted RPD criteria are considered to be a suitable measure for the reproducibility of results within a naturally heterogeneous media such as soil. A ≤50% RPD trigger value will be used, with any exceedances being discussed and assessed for acceptability.

3 SAMPLING AND ANALYSIS PLAN

3.1 Rationale for sampling strategy and density

The field sampling program was based on a targeted approach to investigate the contamination status of soil and surface water resulting from historical uses at the site.

Sampling locations from this assessment are shown on Figure 2. Table 2 summarises the rationale for each assessment location.

3.2 Sampling methods

Soil samples were collected from the centre of the bucket of the excavator used during test pitting. Each sample was collected using disposable nitrile gloves to avoid cross contamination.

TABLE 2 SAMPLING LOCATION RATIONALE

Sample Point	Media	Rationale
DP1	Soil	Investigate the horizontal extent of the potential hydrocarbon impact from the USTs.
SS1	Soil	Investigate the quality of soil and potential bio-solids stored in the sand filter of the WWTP.
SS2	Soil	Investigate the quality of soil and potential bio-solids stored in the sand filter of the WWTP.
SS3	Soil	Investigate soil pile.
SS4	Soil	Investigate soil quality on the discharge channel of the WWTP.
SS5	Soil	Investigate topsoil/ fill at former army camp footprint.
SS6	Soil	Investigate topsoil/ fill at former army camp footprint.
TP1	Soil	Investigate the horizontal extent of the potential hydrocarbon impact from the USTs.
TP2	Soil	Investigate the horizontal extent of the potential hydrocarbon impact from the USTs.
TP3	Soil	Investigate the horizontal extent of the potential hydrocarbon impact from the USTs.
TP4	Soil	Investigate fill.
TP5	Soil	Investigate fill.
TP6	Soil	Investigate fill.
TP7	Soil	Investigate soil mound.
TP8	Soil	Investigate soil mound.
TP9	Soil	Investigate soil mound.
TP10	Soil	Investigate soil mound.
TP11	Soil	Investigate soil mound.
TP12	Soil	Investigate soil quality at the discharge point of the workshop area drain.
TP13	Soil	Investigate fill
TP14	Soil	Investigate soil quality on the discharge point of the WWTP.
TP15	Soil	Investigate soil pile.

Sample Point	Media	Rationale
TP16	Soil	Investigate soil pile.
TP17	Soil	Investigate topsoil/ fill at former army camp footprint.
TP18	Soil	Investigate topsoil/ fill at former army camp footprint.
TP19	Soil	Investigate soil mound.
TP20	Soil	Investigate soil mound.
TP21	Soil	Investigate soil mound.
TP22	Soil	Investigate soil mound.
TP23	Soil	Investigate soil pile.
TP24	Soil	Water levee (reworked natural).
TP25	Soil	Investigate soil pile.
WS1	Water	Investigate water quality of the WWTP
WS2	Water	Investigate water quality of the WWTP
WS3	Water	Establish baseline water quality conditions
WS4	Water	Establish baseline water quality conditions

All sampling procedures were undertaken in accordance with our Soil, gas & groundwater sampling manual (Environmental Earth Sciences, 2012), which should be referred to for further detail.

3.3 Rationale for laboratory analysis schedule

Laboratory analysis schedule for soil and groundwater samples collected during this project are summarised in Table 3. This table also shows primary / duplicate sample counts, which need to satisfy a ratio of 1:20 or higher.

The analytes selected are based on determination of the contaminants of potential concern for the site, and their potential derivatives. The analytical methods selected are based on those recommended by the laboratories and publications such as *Standard methods for the examination of water and waste-water* (APHA 2005, 21st edition) and *Australian laboratory handbook of soil and water chemical methods* (Rayment & Higginson 1992).

TABLE 3 ANALYTICAL SCHEDULE

Analyte – Soil	Primary Sample Count	Duplicates	Ratio	PASS / FAIL
8 Metals (As, Cd, Cu, Cr, Pb, Hg, Ni, Zn)	39	2	~ 1:19	PASS
BTEXN	39	2	~ 1:19	PASS
Ionic balance (for water)	2	1	1:2	PASS
Microbiological analysis	7	NA	NA	NA
Asbestos presence/ absence	16	NA	NA	NA



Analyte – Soil	Primary Sample Count	Duplicates	Ratio	PASS / FAIL
Polycyclic aromatic hydrocarbons (PAH)	35	2	~ 1:19	PASS
TRH (> C ₁₀ -C ₄₀)	39	2	~ 1:19	PASS

Note: Methods used are reported in the laboratory transcripts appended and are detailed in the *Standard methods for the examination of water and waste-water* (APHA 2005) and/or *Australian laboratory handbook of soil and water chemical methods* (Rayment & Higginson 1992).

4 QUALITY CONTROL AND QUALITY ASSURANCE

4.1 Measurement data quality objectives

The aim of a quality control and quality assurance (QA/QC) is to deliver data that is representative of what is sampled, precise, accurate and reproducible. As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this section is to MDQIs, which will be used to establish whether the assessment objectives have been met.

Measurement data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. Although not necessarily considered in list order, the following items should form part of the QA/QC data evaluation:
Measured Parameters: precision, accuracy, repeatability (comparability), blanks; and
Assessed Parameters: completeness, representative of site conditions, sensitivity, and holding times.

The laboratories used should be NATA accredited for the analytical methods performed. Containers, sample preservation (if necessary) and holding times should be consistent with industry practices as set out in NEPM (2013) and as defined by ASTM. The QA parameters selected and the criteria used to evaluate the analytical data are defined below.

4.1.1 Repeatability (Field collected intra-laboratory duplicates)

These samples provide a check on the analytical performance of the laboratory. At least 5 percent of soil samples (1 in 20) per day of sampling from a site are collected in duplicate. For comparability of data, it is important that there is little delay in the sample submission. For split samples, because of error associated with field splitting, an RPD of between 80 and 150% (depending on the substance) will be allowed as the MDQI. Soil heterogeneity due to the “nugget effect” could result in significantly greater difference, particularly for metals. Consequently, samples with the most observable field homogeneity are selected.

Any value >50% RPD will be noted and discussed, as per Standards Australia requirements, with respect to its acceptability for inclusion in the data-set.

4.1.2 Precision

Precision is a measure of the reproducibility of results, and is assessed on the basis of agreement between a set of replicate results obtained from duplicate analyses. The

precision of a duplicate determination can be measured as relative percentage difference (RPD), and is calculated from the following equation:

$$RPD = \left| \frac{X1 - X2}{\left(\frac{X1 + X2}{2} \right)} \right| \times 100$$

where: X1 is the first duplicate value
X2 is the second duplicate value

Field duplicate sample pairings are summarised in Table 4 with results and calculated RPDs are presented in the table at the rear of this appendix.

4.1.3 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. The determination of accuracy can be achieved through the analysis of known reference materials or assessed by the analysis of matrix spikes. Accuracy is measured in terms of percentage recovery as defined by the following equation:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where: %R = percentage recovery of the spike
SSR = spiked sample result
SR = sample result (native)
SA = spike added

Laboratories calculate percentage recoveries of spiked compounds, which are evaluated against control or acceptance limits taken from the appropriate method or the Contract Laboratory Program Statement of Work. If the spike recovery for a sample does not fall within the prescribed control limits, laboratory based corrective action is required.

Surrogate spikes consist of spiking non-target compounds into the sample prior to analysis. The spiked compounds are expected to behave during analysis in the same way as the target compounds. Every sample is spiked prior to extraction or analysis with surrogate compounds that are representative of the analysis. If surrogate spike recovery does not meet the prescribed control limits, samples should be reanalysed.

4.1.4 Representativeness

Data Point Evaluation

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition.

Representativeness is primarily dependent on the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols, and use of proper chain-of-custody and documentation procedures. Blanks, holding times and field duplicates are all QA parameters that can assist in the analysis of representativeness for data point evaluation and will need to be analysed as part of the measurement data quality assessment.

Data Set Evaluation

Whether the data is representative of the site is checked in part by undertaking an evaluation of the whole data set to establish the data is compatible. Data compatibility is authenticated by confirming that the laws of chemistry are upheld (i.e. nitrate is not present when Eh is - 250 mV), that intra-laboratory analysis relationships are consistent (i.e. BTEX is a subset of the TRH C₆-C₄₀ fraction), that observations and field measurements are in agreement with other field data and the laboratory data and that results are consistent with the geology, history and logic.

4.1.5 Completeness

The following information is required to check for completeness of data sets:

- chain-of-custody forms (completed by Environmental Earth Sciences and the laboratory);
- sample receipt forms;
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and relative percent differences (RPDs) calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

4.1.6 Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity, sampling procedures) under which separate sets of data are produced to ensure minimal common error. Data comparability should be demonstrated by the use of standardised sampling and analysis procedures. Data comparability was maintained by undertaking the investigations as follows:

- sampling during the investigation was conducted by trained Environmental Earth Sciences field team using Environmental Earth Sciences' standard operating procedures;
- all soil samples were collected using push tube/auger flight /test pit walls/excavator bucket sampling methods;

- groundwater samples were collected using dedicated valves, tubing and bailers; and
- the same laboratories (ALS, NMI and SAL) were used for organic and inorganic analysis for all relevant samples using the same NATA approved analytical methods.

4.1.7 Sensitivity

When interferences are present in the sample, a loss of sensitivity can occur resulting in an increase in the method detection limit. In some instances (e.g. where one or more compounds have particularly high concentrations) the sample must be diluted for analysis. This increases the method detection limit by the dilution factor.

The detection limits achieved by the laboratory, when adjusted for dry weight and interferences from the presence of other chemicals within the sampled matrix, must be less than half the site criteria for all analytes tested (i.e. $2 \times \text{LOR} < \text{site criteria}$).

4.1.8 Blanks

To meet the QC acceptance criteria, laboratory blanks should have no detectable concentrations of the target compounds. Trip blanks (taken to and returned from the field) and rinsate blanks (taken in the field) will only be necessary for analysing dissolved metals and volatile organic compounds in water samples where the threshold value is near the detection limit for an individual compound or element.

4.1.9 Holding times

Where standard holding times are exceeded, a discussion, using professional judgement, as to the integrity of the data will be required, taking into account such factors as field storage, laboratory storage and even sample bottle characteristics.

4.1.10 Procedures for anomalous samples and confirmation checking

All results should be checked for discrepancies by the project manager against the anticipated results and all other results within 8 hours of receipt of the results from the laboratory.

Any result that is considered by the supervising scientist to be unusually high or at variance with other results is automatically reanalysed. A significantly different result requires immediate remedial action on the whole sample batch (retesting or using an alternative analytical method) at the laboratory's expense.

After appropriate checking by laboratories, all sample analysis result work-sheets, including those of duplicates and replicate analyses, should be checked by the consultant. Once confirmation checking is completed the final laboratory report is issued.

For blind duplicates, if one sample has more than two analytes exceeding the data quality objectives, the sample is carefully checked. If the error is not apparent, the sample is rejected. If more than three samples are rejected all the samples collected at that time are rejected. These samples are then re-sampled and reanalysed.

4.2 Field QA/QC

4.2.1 Details of sampling team

Fieldwork was conducted on 22-23 November 2017 by Mert Berberoglu (Environmental Engineer).

4.2.2 Sampling controls

Soil samples were collected from the push tube liner by hand using disposable nitrile gloves. Groundwater samples were collected using dedicated waterra tubing and foot valves.

4.2.3 Sample notation details

Borelogs include details for each sample collected (including time, location, initials of sampler, duplicate locations, duplicate type and field screening details) are presented in Appendix B. The chemical analyses performed on each sample are presented on the chain of custody documentation (Appendix G) which also identify for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method (if any), departure time from the site and dispatch courier.

4.2.4 Duplicate sampling

Duplicate samples were collected at a rate of at least one duplicate per twenty samples collected (5%). The number of duplicates collected and analysed for each analytical method is provided in Table 4, while a list of the field duplicate pairings is provided in Table 4. Results and calculated RPDs for duplicate analysis results is presented in Table 5. All RPDs (presented in Table 5) satisfied the criteria displayed in Table 1 for DQIs.

TABLE 4 FIELD DUPLICATE PAIRINGS

Pairing ID	Medium	Primary Sample ID	Intra-lab duplicate Sample ID	Primary Sample Lab Batch
1	soil	TP2 0.8-1.0	FD1	ES1729844
2	soil	TP22 0.2-0.3	FD2	ES1729844

TABLE 5 RPD COMPARISON TABLE

Chemical Name	Units	Field ID (EQL)	TP2 0.8-1.0	FD1	RPD	TP22 0.2-0.3	FD2	RPD
Moisture Content	%	1	11.4	10.3	10	6.6	6.7	2
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene (Ex SVOC)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0



Chemical Name	Units	Field ID (EQL)	TP2 0.8-1.0	FD1	RPD	TP22 0.2-0.3	FD2	RPD
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Total BTEX	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
Xylene (m & p)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Xylene (o)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Xylene Total	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
C6-C10 less BTEX (F1)	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0
Lead	mg/kg	5	22.0	20.0	10	866.0	799.0	8
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.4	0.4	0
Arsenic	mg/kg	5	6.0	5.0	18	12.0	11.0	9
Cadmium	mg/kg	1	<1.0	<1.0	0	6.0	6.0	0
Chromium (III+VI)	mg/kg	2	17.0	15.0	13	56.0	53.0	6
Copper	mg/kg	5	14.0	12.0	15	258.0	249.0	4
Nickel	mg/kg	2	6.0	5.0	18	49.0	46.0	6
Zinc	mg/kg	5	15.0	13.0	14	3950.0	4050.0	3
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
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(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
PAHs (Sum of total)	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



Chemical Name	Units	Field ID (EQL)	TP2 0.8-1.0	FD1	RPD	TP22 0.2-0.3	FD2	RPD
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene	mg/kg	1	<1.0	<1.0	0	<1.0	<1.0	0
C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C10 - C14	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C15 - C28	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
C29-C36	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C6 - C9	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0
C6-C10	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0

4.2.3 Field instrument calibration

Table 6 summarises field instruments and associated calibration details for the soil and groundwater sampling program:

TABLE 6 INSTRUMENT CALIBRATION

Date	Meter	Parameter	Calibration
20-Nov-2017	PID	VOC	Air and 100% isobutylene

Field equipment used for the groundwater investigation and for screening of soils (PID) was appropriate for the required works and was used in the appropriate manner. The instruments were calibrated in accordance with the manufacturer specifications and Environmental Earth Sciences field procedure and QA/QC documentation. Calibration certificate is included at the rear of this attachment.

5 LABORATORY QA/QC

Environmental Earth Sciences analysis for this project was completed by ALS Laboratory in Smithfield for primary and intra-laboratory duplicate sample analyses (batch ID: ES1729844).

5.1 General

Internal laboratory procedures to validate their methods and reported data is required as a check for completeness of data sets. Laboratory duplicates have also been taken as an internal measure of data precision. The following checks have been undertaken as part of laboratory QAQC:

- chain-of-custody forms (completed by Environmental Earth Sciences and the laboratory);
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and relative percent differences (RPDs) calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

All laboratories are accredited by NATA for the methods used, details of this accreditation can be viewed at <http://www.nata.asn.au/>, while details of the samples sent to each laboratory and the analysis requested are contained in the chain of custody documentation held in Appendix E. The analytical methods are noted on the laboratory transcripts. The collection date of samples, laboratory extraction date and allowable holding time are presented in Table 7. All analysis was completed within the allowable holding times.

TABLE 7 HOLDING TIMES

ALS – ES1729844					
Analyte – Soil	Dates			Allowable holding time	Conclusion
	Collected	Extracted	Analysed		
Asbestos ID (bulk)	22-Nov-17	----	30-Nov-17	No limit	PASS
Asbestos ID (soils)	22-Nov-17	----	30-Nov-17	No limit	PASS
Asbestos ID (quantification)	22-Nov-17	----	30-Nov-17	No limit	PASS
Heavy Metals	22/23-Nov-17	30-Nov-17	1-Dec-17	6 months	PASS
Heavy metal (Hg)	22/23-Nov-17	30-Nov-17	1-Dec-17	1 Month	PASS
Moisture content	22-Nov-17	----	28-Nov-17	No limit	PASS
TRH (C6 – C10)	22/23-Nov-17	28/29-Nov-17	29/30-Nov-17	2 weeks	PASS
TRH (C10 – C40)	22-Nov-17	5-Dec-17	7-Dec-17	1 Month	PASS
PAH	22/23-Nov-17	28/29-Nov-17	29-Nov-17	1 Month	PASS
BTEX	22/23-Nov-17	28-Nov-17	29-Nov-17	2 weeks	PASS

ALS – ES1729844 / SAL 26583					
Analyte – Water	Dates			Allowable holding time	Conclusion
	Collected	Extracted	Analysed		
Heavy Metals	22-Nov-17	30-Nov-17	1-Dec-17	6 months	PASS
Heavy metal (Hg)	22-Nov-17	30-Nov-17	1-Dec-17	1 Month	PASS
TRH (C6 – C10)	22/23-Nov-17	28/29-Nov-17	28/29-Nov-17	2 weeks	PASS
TRH (C10 – C40)	22/23-Nov-17	28/29-Nov-17	28/29-Nov-17	1 Month	PASS
BTEX + Naphthalene	22/23-Nov-17	28-Nov-17	28-Nov-17	2 weeks	PASS
Heterotrophic Plate Count	22-Nov-17	----	28-Nov-17	1-day	FAIL
Faecal Coliforms & E.coli	22-Nov-17	----	28-Nov-17	1-day	FAIL
Coliforms	22-Nov-17	----	28-Nov-17	1-day	FAIL
Faecal Streptococci	22-Nov-17	----	28-Nov-17	1-day	FAIL

5.2 Acceptance criteria

Individual laboratories set their own internal acceptance criteria to determine if recoveries from spiked samples and RPD's from laboratory duplicate sample, are within acceptable ranges. The following subsections summarise the internal acceptance criteria for ALS (primary laboratory):

- acceptable matrix spike recoveries limits are static and set at 70-130%;
- acceptable RPDs on laboratory duplicates is < 20%, and <50% for selected metals;
- acceptable recovery limits for laboratory control samples;
- surrogate recovery limits are static and based on USEPA (SW846) or ALS-QWI/EN/38 (in the absence of specific USEPA limits); and
- acceptable results for method blank samples are non-detection.

5.3 Matrix spike results

Recoveries for matrix spike samples were reported in acceptable limits.

5.4 Method blank results

There were no method blank outliers reported for all samples.

5.5 Laboratory duplicate outliers

RPD's for laboratory duplicate samples were reported within acceptable limits for the data.

5.6 Laboratory control sample outliers

Recoveries for laboratory control samples were reported in acceptable limits for the data.

5.7 Surrogate sample results

All surrogate spike recoveries for were reported in acceptable limits.

5.8 QA/QC data evaluation

The collected and used for this investigation is considered reliable. The following DQOs have been satisfactorily achieved:

- RPD values;
- holding times;
- field measurements/calibration; and
- laboratory controls.

Extraction and analysis of samples were all within the relevant prescribed holding times. The internal laboratory control results (blanks, duplicates and spikes) are considered to be acceptable.

Based on information presented it can be confidently stated that the MDQO's for this project have been met and the data set is considered to be reliable.

6 QAQC APPENDIX REFERENCES

American Public Health Association (APHA) 2005, *Standard methods for the examination of water and waste-water*, 21st edition, APHA, Washington DC.

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SDG		ALSE-Sydney 27-Nov-17		ALSE-Sydney 27-Nov-17		ALSE-Sydney 27-Nov-17		ALSE-Sydney 27-Nov-17	
Field ID		TP2 0.8-1.0		FD1		TP22 0.2-0.3		FD2	
Sampled Date/Time		22/11/2017 15:00		22/11/2017 15:00		22/11/2017 15:00		22/11/2017 15:00	
				RPD				RPD	
ChemName	Units	EQL							
Moisture Content	%	1	11.4	10.3	10	6.6	6.7		2
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	1.2		0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	0.6		0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Naphthalene (Ex SVOC)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2		0
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Total BTEX	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2		0
Xylene (m & p)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Xylene (o)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
Xylene Total	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
C6-C10 less BTEX (F1)	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0		0
Lead	mg/kg	5	22.0	20.0	10	866.0	799.0		8
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.4	0.4		0
Arsenic	mg/kg	5	6.0	5.0	18	12.0	11.0		9
Cadmium	mg/kg	1	<1.0	<1.0	0	6.0	6.0		0
Chromium (III+VI)	mg/kg	2	17.0	15.0	13	56.0	53.0		6
Copper	mg/kg	5	14.0	12.0	15	258.0	249.0		4
Nickel	mg/kg	2	6.0	5.0	18	49.0	46.0		6
Zinc	mg/kg	5	15.0	13.0	14	3950.0	4050.0		3
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5		0
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(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
PAHs (Sum of total)	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
Naphthalene	mg/kg	1	<1.0	<1.0	0	<1.0	<1.0		0
C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0		0
C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0		0
C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0		0
F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0		0
C10 - C14	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0		0
C15 - C28	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0		0
C29-C36	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0		0
+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0		0
C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0		0
C6 - C9	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0		0
C6-C10	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0		0

		SDG	ALSE-Sydney 27-Nov-17	ALSE-Sydney 27-Nov-17	RPD	ALSE-Sydney 27-Nov-17	ALSE-Sydney 27-Nov-17	RPD
		Field ID	TP2 0.8-1.0	FD1		TP22 0.2-0.3	FD2	
		Sampled Date/Time	22/11/2017 15:00	22/11/2017 15:00		22/11/2017 15:00	22/11/2017 15:00	
ChemName	Units	EQL						
Moisture Content	%	1	11.4	10.3	10	6.6	6.7	2
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene (Ex SVOC)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Total BTEX	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
Xylene (m & p)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Xylene (o)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Xylene Total	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
C6-C10 less BTEX (F1)	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0
Lead	mg/kg	5	22.0	20.0	10	866.0	799.0	8
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.4	0.4	0
Arsenic	mg/kg	5	6.0	5.0	18	12.0	11.0	9
Cadmium	mg/kg	1	<1.0	<1.0	0	6.0	6.0	0
Chromium (III+VI)	mg/kg	2	17.0	15.0	13	56.0	53.0	6
Copper	mg/kg	5	14.0	12.0	15	258.0	249.0	4
Nickel	mg/kg	2	6.0	5.0	18	49.0	46.0	6
Zinc	mg/kg	5	15.0	13.0	14	3950.0	4050.0	3
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
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(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
PAHs (Sum of total)	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
Naphthalene	mg/kg	1	<1.0	<1.0	0	<1.0	<1.0	0
C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C10 - C14	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C15 - C28	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
C29-C36	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
C6 - C9	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0
C6-C10	mg/kg	10	<10.0	<10.0	0	<10.0	<10.0	0

APPENDIX G2 - QA/QC EASTERN PORTION

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1 INTRODUCTION AND BACKGROUND

1.1 Introduction

The aim of quality control and quality assurance (QA/QC) is to deliver data that is:

- representative of what is sampled;
- precise;
- accurate; and
- reproducible.

As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this document is to evaluate and identify the data quality objectives (DQOs) and the data quality indicators (DQIs), which are used to assess whether the DQOs have been met.

All surface water, groundwater and soil sampling procedures to be followed are described in full in our *Soil, gas and groundwater sampling manual* (Environmental Earth Sciences Pty Ltd (2011)). This document should be referred to for field procedures for sampling and conveyance. Copies are available for inspection if required.

The NSW guideline documents used in the evaluation of the data set for this investigation are:

- NSW Department of Environment and Conservation (DEC) (2006). *Contaminated sites: Guidelines for NSW Site Auditors Scheme* (2nd edition);
- National Environment Protection Council (NEPC) (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure*;
- NSW Environment Protection Authority (EPA) (1995). *Contaminated Sites: Sampling design guidelines*; and
- NSW Office of Environment and Heritage (OEH) (2011). *Contaminated sites: Guidelines for consultants reporting on contaminated sites*.

Data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. These are referred to as the PARCC parameters. The PARCC (and additional QA) parameters are discussed within this report.

The following items form part of the QA/QC appendix:

- repeatability;
- precision;
- accuracy;
- representativeness;
- completeness;
- comparability;
- sensitivity;
- holding times;

- blanks; and
- procedures for anomalous samples and confirmation checking.

1.2 Background

Quality Assurance (QA) is “a set of activities intended to establish confidence that quality requirements will be met” (AS/NZS ISO 9000:2005).

This encompasses all actions, procedures, checks and decisions undertaken to ensure the accuracy and reliability of analysis results. It includes routine procedures which ensure proper sample control, data transfer, instrument calibration, the decisions required to select and properly train staff, select equipment and analytical methods, and the day to day judgements resulting from regular scrutiny and maintenance of the laboratory system.

Quality Control (QC) is “a set of activities intended to ensure that quality requirements are actually being met” (AS/NZS ISO 9000:2005). In other words, the operational techniques and activities used to fulfil the requirements for quality.

These are the components of QA which serve to monitor and measure the effectiveness of other QA procedures by comparison with previously decided objectives. They include measurement of the quality of reagents, cleanliness of apparatus, accuracy and precision of methods and instrumentation, and reliability of all of these factors as implemented in a given laboratory from day to day.

A complete discussion of either of these terms or the steps for implementing them is beyond the scope of this document. It is widely recognised, however, that adoption of sound laboratory QA and QC procedures is essential, and readers are referred to documentation available from the National Association of Testing Authorities (NATA), if further information is required.

2 DATA QUALITY OBJECTIVES

The Data Quality Objectives (DQOs) process is a systematic approach used to define the type, quantity and quality of data supporting decisions which relate to the environmental condition of a site. Table 1 outlines the method data quality indicators (MDQIs) for the investigation.

TABLE 1 MEASUREMENT DATA QUALITY INDICATORS (MDQIS)

Parameter	Procedure	Minimum Frequency	Criteria	
			(5 to 10x LOR ⁴)	>10x LOR
Precision	Field Duplicates	1 in 20 - metals	<80 RPD	<50 RPD
		1 in 20 - semi-volatiles	<100 RPD	<80 RPD
		1 in 20 - volatiles	<150 RPD	<130 RPD
	Lab Replicate*	1 in 20	<50 RPD	<30 RPD
Accuracy*	Reference Material	1 in 10	60% to 140%R	80% to 120%R
	Matrix spikes			
	Surrogate spikes			
Representativeness*	Reagent Blanks	1 per batch	No detection	
	Holding Times*	Every sample	-	
Blanks**	Trip Blank	1 per batch	No detection	
	Rinsate Blanks			
Sensitivity	Limit of Reporting	Every sample	LOR < ½ site criteria	

Notes:

1. RPD – relative percentage difference;
2. %R – percent recovery;
3. LOR – limit of reporting;
4. no limit at <5x LOR;
5. * the MDQI is usually specified in the standard method. If not, use the default values set out in this table; and
6. ** only necessary when measuring dissolved metals and volatile organic compounds in water samples.

It should be noted that Standards Australia (AS4482.1) specify that typical MDQIs for precision should be ≤50% RPD, however also acknowledge that low concentrations and organic compounds in particular can be acceptably outside this range. The standard suggests that ≤50% RPD be used as a ‘trigger’ and values above this level of repeatability need to be noted and explained.

Our adopted MDQIs for precision acknowledge the intrinsic heterogeneity of metal and semi volatile chemical concentrations in disturbed soil that may potentially cause large variations in results between laboratory subsamples (although all efforts are made to homogenise non volatile duplicate samples). Similarly, large variations in volatile chemical concentrations between duplicates may be unavoidable even when using best practice sampling methodology, especially as we seek to minimise the disturbance to the sample while splitting it which means a high degree of inherent heterogeneity is expected.

As such, our adopted RPD criteria are considered to be a suitable measure for the reproducibility of results within a naturally heterogeneous media such as soil. A ≤50% RPD trigger value will be used, with any exceedance discussed and assessed for acceptability.

3 QUALITY CONTROL AND QUALITY ASSURANCE

3.1 Measurement data quality objectives

The aim of a quality control and quality assurance (QA/QC) is to deliver data that is representative of what is sampled, precise, accurate and reproducible. As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this section is to MDQIs, which will be used to establish whether the assessment objectives have been met.

Measurement data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. Although not necessarily considered in list order, the following items should form part of the QA/QC data evaluation:
 Measured Parameters: precision, accuracy, repeatability (comparability), blanks; and
 Assessed Parameters: completeness, representative of site conditions, sensitivity, and holding times.

The laboratories used should be NATA accredited for the analytical methods performed. Containers, sample preservation (if necessary) and holding times should be consistent with industry practices as set out in NEPM (2013) and as defined by ASTM. The QA parameters selected and the criteria used to evaluate the analytical data are defined below.

3.1.1 Repeatability (Field collected intra-laboratory duplicates)

These samples provide a check on the analytical performance of the laboratory. At least 5 percent of soil samples (1 in 20) per day of sampling from a site are collected in duplicate. For comparability of data, it is important that there is little delay in the sample submission. For split samples, because of error associated with field splitting, an RPD of between 80 and 150% (depending on the substance) will be allowed as the MDQI. Soil heterogeneity due to the “nugget effect” could result in significantly greater difference, particularly for metals. Consequently, samples with the most observable field homogeneity are selected.

Any value >50% RPD will be noted and discussed, as per Standards Australia requirements, with respect to its acceptability for inclusion in the data-set.

3.1.2 Precision

Precision is a measure of the reproducibility of results and is assessed on the basis of agreement between a set of replicate results obtained from duplicate analyses. The precision of a duplicate determination can be measured as relative percentage difference (RPD), and is calculated from the following equation:

$$RPD = \left[\frac{X1 - X2}{\left(\frac{X1 + X2}{2} \right)} \right] \times 100$$

where: X1 is the first duplicate value

X2 is the second duplicate value

Field duplicate sample pairings are summarised in **Table 2** with results and calculated RPDs are presented in the table at the rear of this appendix.

3.1.3 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. The determination of accuracy can be achieved through the analysis of known reference materials or assessed by the analysis of matrix spikes. Accuracy is measured in terms of percentage recovery as defined by the following equation:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where: %R = percentage recovery of the spike
 SSR = spiked sample result
 SR = sample result (native)
 SA = spike added

Laboratories calculate percentage recoveries of spiked compounds, which are evaluated against control or acceptance limits taken from the appropriate method or the Contract Laboratory Program Statement of Work. If the spike recovery for a sample does not fall within the prescribed control limits, laboratory based corrective action is required.

Surrogate spikes consist of spiking non-target compounds into the sample prior to analysis. The spiked compounds are expected to behave during analysis in the same way as the target compounds. Every sample is spiked prior to extraction or analysis with surrogate compounds that are representative of the analysis. If surrogate spike recovery does not meet the prescribed control limits, samples should be reanalysed.

3.1.4 Representativeness

Data Point Evaluation

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent on the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols, and use of proper chain-of-custody and documentation procedures. Blanks, holding times and field duplicates are all QA parameters that can assist in the analysis of representativeness for data point evaluation and will need to be analysed as part of the measurement data quality assessment.

Data Set Evaluation

Whether the data is representative of the site is checked in part by undertaking an evaluation of the whole data set to establish the data is compatible. Data compatibility is authenticated by confirming that the laws of chemistry are upheld (i.e. nitrate is not present when Eh is -250 mV), that intra-laboratory analysis relationships are consistent (i.e. BTEX is a subset of the TRH C₆-C₄₀ fraction), that observations and field measurements are in agreement with other field data and the laboratory data and that results are consistent with the geology, history and logic.

3.1.5 Completeness

The following information is required to check for completeness of data sets:

- chain-of-custody forms (completed by Environmental Earth Sciences and the laboratory);
- sample receipt forms;
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and relative percent differences (RPDs) calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

3.1.6 Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity, sampling procedures) under which separate sets of data are produced to ensure minimal common error. Data comparability should be demonstrated by the use of standardised sampling and analysis procedures. Data comparability was maintained by undertaking the investigations as follows:

- sampling during the investigation was conducted by trained Environmental Earth Sciences field team using Environmental Earth Sciences' standard operating procedures;
- all soil samples were collected using push tube/auger flight /test pit walls/excavator bucket sampling methods;
- groundwater samples were collected using dedicated valves, tubing and bailers; and
- the same laboratories (Envirolab) were used for organic and inorganic analysis for all relevant samples using the same NATA approved analytical methods.

3.1.7 Sensitivity

When interferences are present in the sample, a loss of sensitivity can occur resulting in an increase in the method detection limit. In some instances (e.g. where one or more compounds have particularly high concentrations) the sample must be diluted for analysis. This increases the method detection limit by the dilution factor.

The detection limits achieved by the laboratory, when adjusted for dry weight and interferences from the presence of other chemicals within the sampled matrix, must be less than half the site criteria for all analytes tested (i.e. $2 \times \text{LOR} < \text{site criteria}$).

3.1.8 Blanks

To meet the QC acceptance criteria, laboratory blanks should have no detectable concentrations of the target compounds. Trip blanks (taken to and returned from the field) and rinsate blanks (taken in the field) will only be necessary for analysing dissolved metals and volatile organic compounds in water samples where the threshold value is near the detection limit for an individual compound or element.

3.1.9 Holding times

Where standard holding times are exceeded, a discussion, using professional judgement, as to the integrity of the data will be required, taking into account such factors as field storage, laboratory storage and even sample bottle characteristics.

3.1.10 Procedures for anomalous samples and confirmation checking

All results should be checked for discrepancies by the project manager against the anticipated results and all other results within 8 hours of receipt of the results from the laboratory. Any result that is considered by the supervising scientist to be unusually high or at variance with other results is automatically reanalysed. A significantly different result requires immediate remedial action on the whole sample batch (retesting or using an alternative analytical method) at the laboratory's expense. After appropriate checking by laboratories, all sample analysis result work-sheets, including those of duplicates and replicate analyses, should be checked by the consultant. Once confirmation checking is completed the final laboratory report is issued. For blind duplicates, if one sample has more than two analytes exceeding the data quality objectives, the sample is carefully checked. If the error is not apparent, the sample is rejected. If more than three samples are rejected all the samples collected at that time are rejected. These samples are then re-sampled and reanalysed.

3.2 Field QA/QC

3.2.1 Details of sampling team

Fieldwork was conducted on the 29th of June and the 2nd of July 2018 by Lachlan Desailly (Environmental Scientist).

3.2.2 Sampling controls

Decontamination procedures carried out between sampling events included the following.

All sampling equipment that was re-used which came into contact with water or soil samples, were thoroughly washed with detergent (Decon 90 or similar) water, then rinsed with clean water and dried before the collection of each sample. Any items accidentally contaminated were similarly washed before re-use. Soil samples were collected from soil profiles removed from a push tube/hand auger/auger flight/split spoon. New nitrile gloves were used at each sampling location. To prevent cross contamination, the exterior of each soil sample was cut away (effectively skinning the soil sample) using a clean spatula. During this process the field scientist would also determine the colour and texture of the soil sample.

Sample notation details

Borelogs include details for each sample collected (including time, location, initials of sampler, duplicate locations, duplicate type and field screening details) are presented in Appendix A. The chemical analyses performed on each sample are presented on the chain of custody documentation (Appendix G) which also identify for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method (if any), departure time from the site and dispatch courier.

Duplicate sampling

The intra (blind) were collected at a rate of one duplicate per twenty samples collected (5%).

For this project two intra (blind) duplicate samples were collected for analysis. The summary of the relative percentage differences (RPDs) of the collected inter and intra duplicate samples is presented in Table 2.

Table 2 - Field Duplicate RPD

Environmental Earth Sciences ID: Lab Batch ID: Sample Date:			Intra-Laboratory Pair 1				Intra-Laboratory Pair 2			
			FD3	BH6	RPD	Notes	FD1	TP4-1	RPD	Notes
			195714	195714			195714	195714		
Analyte grouping/Analyte	Units	EQL	29/06/2018	29/06/2018			29/06/2018	29/06/2018		
TPH (NEPM, 1999)										
TPH C6-C9 Fraction	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TPH C10 - C14 Fraction	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
TPH C15-C28 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TPH C29-C36 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH (NEPM, 2013)										
TRH C6-C10 Fraction	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TRH C6-C10 less BTEX (F1)	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TRH >C10-C16 Fraction	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
TRH >C16-C34 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH >C34-C40 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH C10 - C40 (Sum of total)	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
BTEX										
Benzene	mg/kg	0.2	<0.2	<0.2	NC	PASS	<0.2	<0.2	NC	PASS
Toluene	mg/kg	0.5	<0.5	<0.5	NC	PASS	<0.5	<0.5	NC	PASS
Ethylbenzene	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Xylene (m & p)	mg/kg	2	<2	<2	NC	PASS	<2	<2	NC	PASS
Xylene (o)	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Xylene Total	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Naphthalene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Inorganics										
Molbure Content	%	0.1	7.4	9.4	23.80952381	NOTED	12	13	8	PASS
Metals										
Arsenic	mg/kg	4	<4	<4	NC	PASS	<4	<4	NC	PASS
Cadmium	mg/kg	0.4	<0.4	<0.4	NC	PASS	<0.4	<0.4	NC	PASS
Chromium (III+VI)	mg/kg	1	10	10	0	PASS	8	8	0	PASS
Copper	mg/kg	1	10	10	0	PASS	42	30	33.33333333	NOTED
Lead	mg/kg	1	11	11	0	PASS	15	12	22.22222222	PASS
Mercury	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Nickel	mg/kg	1	5	6	18.18181818	PASS	17	12	34.48275862	NOTED
Zinc	mg/kg	1	13	13	0	PASS	53	43	20.83333333	PASS
Organochlorine Pesticides										
4,4'-DDE	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
a-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Aldrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
b-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlordane (cis)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlordane (trans)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
d-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDD	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDT	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDT+DDE+DDD	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dieldrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfen I	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfen II	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfen sulphate	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
g-BHC (Lindane)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Heptachlor	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Methoxychlor	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Hexachlorobenzene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Organophosphorus Pesticides										
Azinophos methyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Bromophos-ethyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlorpyrifos	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlorpyrifos-methyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Diazinon	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dichlorvos	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dimethoate	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Ethion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fenitrothion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Malathion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Parathion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Phosnel	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
PAH										
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Acenaphthene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fluorene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Phenanthrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fluoranthene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Pyrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chrysene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benzo(b)fluoranthene	mg/kg	0.2	<0.2	<0.2	NC	PASS	<0.2	<0.2	NC	PASS
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	NC	PASS	<0.05	<0.05	NC	PASS
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS

Notes:

EQL	Estimated Quantitation Limit
mg/kg	Milligrams per kilogram
RPD	Relative Percent Difference
Yellow	No Limit at <5 x EQL
Green	< 50% RPD = PASS
Orange	>50% RPD = NOTED

3.3 Laboratory QA/QC

Environmental Earth Sciences analysis for this project was completed by Envirolab Laboratory in Chatswood for primary and intra-laboratory duplicate sample analyses (batch ID: 195714).

3.3.1 General

Internal laboratory procedures to validate their methods and reported data is required as a check for completeness of data sets. Laboratory duplicates have also been taken as an internal measure of data precision. The following checks have been undertaken as part of laboratory QAQC:

- chain-of-custody forms (completed by Environmental Earth Sciences and the laboratory);
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and relative percent differences (RPDs) calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

All laboratories are accredited by NATA for the methods used, details of this accreditation can be viewed at <http://www.nata.asn.au/>, while details of the samples sent to each laboratory and the analysis requested are contained in the chain of custody documentation held in Appendix G. The analytical methods are noted on the laboratory transcripts along with the laboratory extraction date of samples and allowable holding times. All analysis was completed within the allowable holding times.

3.3.2 Acceptance criteria

Individual laboratories set their own internal acceptance criteria to determine if recoveries from spiked samples and RPD's from laboratory duplicate sample, are within acceptable ranges. The following subsections summarise the internal acceptance criteria for ALS (primary laboratory):

- acceptable matrix spike recoveries limits are static and set at 70-130%;
- acceptable RPDs on laboratory duplicates is < 20%, and <50% for selected metals;
- acceptable recovery limits for laboratory control samples;
- surrogate recovery limits are static and based on USEPA (SW846) or ALS-QWI/EN/38 (in the absence of specific USEPA limits); and
- acceptable results for method blank samples are non-detection.

3.3.3 Matrix spike results

Recoveries for matrix spike samples were reported in acceptable limits.

3.3.4 Method blank results

There were no method blank outliers reported for all samples.

3.3.5 Laboratory duplicate outliers

RPD's for laboratory duplicate samples were reported within acceptable limits for the data.

3.3.6 Laboratory control sample outliers

Recoveries for laboratory control samples were reported in acceptable limits for the data.

3.3.7 Surrogate sample results

All surrogate spike recoveries for were reported in acceptable limits.

3.3.8 QA/QC data evaluation

The collected and used for this investigation is considered reliable. The following DQOs have been satisfactorily achieved:

- RPD values;
- holding times;
- laboratory controls.

Extraction and analysis of samples were all within the relevant prescribed holding times. The internal laboratory control results (blanks, duplicates and spikes) are considered to be acceptable.

Based on information presented it can be confidently stated that the MDQO's for this project have been met and the data set is considered to be reliable.

4 QA/QC APPENDIX REFERENCES

- American Public Health Association (APHA) (2012). *Standard methods for the examination of water and waste-water*. 22nd edition, APHA, Washington DC.
- Australian/New Zealand Standard (AS/NZS) (2008). *Quality management systems - Requirements* (AS/NZS ISO 9001:2008). Standards Australia/Standards New Zealand, Sydney/Wellington.
- Environmental Earth Sciences Pty Ltd (2011). *Soil, gas and groundwater sampling manual*. 7th Edition. Unpublished.
- International Organisation for Standardisation (2005). *Quality management systems – Fundamentals and vocabulary*. (ISO 9000:2005).
- National Environment Protection Council (NEPC) (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure*, Adelaide, SA.
- NSW Department of Environment and Conservation (DEC) (2006). *Contaminated sites: Guidelines for NSW Site Auditors Scheme* (2nd edition).
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- Rayment, G. E, and Lyon, D. J. (2011). *Soil chemical methods – Australasia*, CSIRO Publishing.

Rayment, G. E, and Higginson, F. R, (1992). *Australian laboratory handbook of soil and water chemical methods*, Inkarta Press, Melbourne.

Standards Australia (2005). *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds* (AS 4482.1).

Standards Australia (1999). *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 2: Volatile substances* (AS4482.2).

Table 2 - Field Duplicate RPD

Environmental Earth Sciences ID: Lab Batch ID: Sample Date:			Intra-Laboratory Pair 1				Intra-Laboratory Pair 2			
			FD3	BH6	RPD	Notes	FD1	TP4-1	RPD	Notes
			195714	195714			195714	195714		
Analyte grouping/Analyte	Units	EQL	29/06/2018	29/06/2018			29/06/2018	29/06/2018		
TPH (NEPM, 1999)										
TPH C6-C9 Fracton	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TPH C10 - C14 Fraction	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
TPH C15-C28 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TPH C29-C36 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH (NEPM, 2013)										
TRH C6-C10 Fraction	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TRH C6-C10 less BTEX (F1)	mg/kg	25	<25	<25	NC	PASS	<25	<25	NC	PASS
TRH >C10-C16 Fraction	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
TRH >C16-C34 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH >C34-C40 Fraction	mg/kg	100	<100	<100	NC	PASS	<100	<100	NC	PASS
TRH C10 - C40 (Sum of total)	mg/kg	50	<50	<50	NC	PASS	<50	<50	NC	PASS
BTEX										
Benzene	mg/kg	0.2	<0.2	<0.2	NC	PASS	<0.2	<0.2	NC	PASS
Toluene	mg/kg	0.5	<0.5	<0.5	NC	PASS	<0.5	<0.5	NC	PASS
Ethylbenzene	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Xylene (m & p)	mg/kg	2	<2	<2	NC	PASS	<2	<2	NC	PASS
Xylene (o)	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Xylene Total	mg/kg	1	<1	<1	NC	PASS	<1	<1	NC	PASS
Naphthalene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Inorganics										
Moisture Content	%	0.1	7.4	9.4	23.80952381	NOTED	12	13	8	PASS
Metals										
Arsenic	mg/kg	4	<4	<4	NC	PASS	<4	<4	NC	PASS
Cadmium	mg/kg	0.4	<0.4	<0.4	NC	PASS	<0.4	<0.4	NC	PASS
Chromium (III+VI)	mg/kg	1	10	10	0	PASS	8	8	0	PASS
Copper	mg/kg	1	10	10	0	PASS	42	30	33.33333333	NOTED
Lead	mg/kg	1	11	11	0	PASS	15	12	22.22222222	PASS
Mercury	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Nickel	mg/kg	1	5	6	18.18181818	PASS	17	12	34.48275862	NOTED
Zinc	mg/kg	1	13	13	0	PASS	53	43	20.83333333	PASS
Organochlorine Pesticides										
4,4-DDE	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
a-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Aldrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
b-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlordane (cis)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlordane (trans)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
d-BHC	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDD	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDT	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
DDT+DDE+DDD	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dieldrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfan I	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfan II	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endrin	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
g-BHC (Lindane)	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Heptachlor	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Methoxychlor	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Hexachlorobenzene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Organophosphorous Pesticides										
Azinophos methyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Bromophos-ethyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlorpyrifos	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chlorpyrifos-methyl	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Diazinon	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dichlorvos	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dimethoate	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Ethion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fenitrothion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Malathion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Parathion	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Ronnel	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
PAH										
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Acenaphthene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fluorene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Phenanthrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Fluoranthene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Pyrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benz(a)anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Chrysene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benzo(b)+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	NC	PASS	<0.2	<0.2	NC	PASS
Benzo(a) pyrene	mg/kg	0.05	<0.05	<0.05	NC	PASS	<0.05	<0.05	NC	PASS
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Dibenz(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	NC	PASS	<0.1	<0.1	NC	PASS

Notes:

EQL Estimated Quantitation Limit
mg/kg Milligrams per kilogram
RPD Relative Percent Difference

Yellow No Limit at <5 x EQL

Green < 50% RPD = PASS

Orange >50% RPD = NOTED

