ELOURA HOLDINGS PTY LTD

SEPTEMBER 2018

DETAILED SITE INVESTIGATION AND REMEDIATION ACTION PLAN

176-184 GEORGE STREET, CONCORD WEST NSW

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Detailed Site Investigation and Remediation Action Plan
176-184 George Street, Concord West NSW

Eloura Holdings Pty Ltd

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ABBREVIATIONS

ABC	Ambient background concentration
ACL	Added contaminant limit
AMCP	Asbestos management control plan
ASS	Acid sulphate soils
ASRIS	Australian Soil Resource Information Database
ANZECC	Australian & New Zealand Environment & Conservation Council
BTEX	Benzene, toluene, ethylbenzene and xylene
BTEXN	Benzene, toluene, ethylbenzene, xylene and naphthalene
DQI	Data quality indicators
DQO	Data quality objectives
DSI	Detailed site investigation
CEC	Cation Exchange Capacity
COC	Chain of custody
C_6–C_{10}	Light petroleum hydrocarbon chain fraction (for example petrol)
>C_{10}–C_{16}	Medium petroleum hydrocarbon chain fraction (for example jet fuel, kerosene, diesel)
>C_{16}–C_{34}	Medium-heavy petroleum hydrocarbon chain fraction (for example diesel, lube oils)
>C_{34}–C_{40}	Heavy petroleum hydrocarbon chain fraction (for example lube oils, waxes)
EC	Electrical conductivity
EIL	Ecological investigation levels
EMP	Environmental management plan
ENM	Excavated Natural Material
ESL	Ecological screening level
EPA	Environmental Protection Authority, formerly also known as DEC (Department of Environment and Conservation), DECCW (Department of Environment, Climate Change and Water)
ESA	Environmental site assessment
ESP	Exchangeable sodium percentage
HESP	Health, Environment and Safety Plan
HIL	Health investigation level
HSL	Health screening level
LEP	Local environmental plan
LOR	Limit of reporting
mAHD	metres relative to Australian Height Datum
mBGL	metres below ground level

NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
NSW	New South Wales
NL	Not limiting
OCPs	Organochlorine pesticides
PAHs	Polycyclic aromatics hydrocarbons
PCBs	Polychlorinated biphenyls
PID	Photo-ionisation detector
ppm	Part per million
POEO Act	Protection of the Environment Operations Act, 1997
PQL	Practical quantitation limit
QA/QC	Quality assurance and quality control
UPSS	Underground petroleum storage system
RAP	Remediation action plan
RPD	Relative percentage difference
SDS	Safety data sheet
SMP	Safety management plan
sVCHs	Semivolatile chlorinated hydrocarbons
TCLP	Toxicity Characteristic Leaching Procedure
TRH	Total recoverable hydrocarbon
VENM	Virgin excavated natural material
mg/kg	Milligrams per kilogram
mg/l	Milligrams per litre
µg/l	Micrograms per litre
µS/cm	MicroSiemens per centimetre

EXECUTIVE SUMMARY

WSP Australia Pty Ltd (WSP) has undertaken a detailed site investigation (DSI) and developed a remedial action plan (RAP) for 176-184 George Street, Concord West NSW. The purpose of the site investigation is to establish the current contamination status, to inform decisions about potential rezoning of the site allowing a change from commercial/industrial to medium density residential land use.

SCOPE OF WORK

An intrusive investigation was completed by WSP in August 2018 consisting of advancement and sampling of 19 soil bores and the installation of four groundwater monitoring wells for subsequent groundwater sampling.

Targeted soil samples were selected and submitted for the analysis of total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), semi volatile chlorinated hydrocarbons (sVCHs) polychlorinated biphenyls (PCBs), heavy metals and asbestos. Groundwater samples were submitted to the laboratory and analysed for TRH, BTEXN, volatile organic compounds (VOCs) and heavy metals.

Considering the findings of historical investigations and the findings of the soil and groundwater study an RAP was prepared with reference to the NSW EPA 2011 *Contaminated Sites: Guideline for Consultants Reporting on Contaminated Sites* and included:

- summary of contamination risks identified on-site;
- review of planned development works;
- a remediation options appraisal;
- detailed description of the recommended remediation approach, including a validation plan to demonstrate the site's suitability once remediation is completed; and,
- site specific environmental and work health and safety requirements.

CONTAMINATION ASSESSMENT RESULTS

The site history indicated that it was undeveloped until 1951. The site appears to be used for commercial/industrial purposes from 1951 to date. The site configuration has generally remained the same since 1951. The surrounding areas appears to have been gradually developed since 1930. Land to the west appears to be reclaimed.

Chemicals of concern including TRH, BTEXN, PAHs, sVCHs, OCPs and PCBs in soil samples collected across the site were reported below the adopted site assessment criteria, with the exception of F3 and benzo(a)pyrene in the most southern portion of the site within BH30 and BH31 respectively. While all concentrations were less than health-based criteria, the concentrations of F3 and benzo(a)pyrene recorded exceed the ecological screening criteria for urban residential and public open space. Heavy metals results were all less than health-based criteria. Results that exceeded the ecological screening criteria for urban residential and commercial/industrial land use were identified within the deeper soil samples (BH43 and BH41) collected within fill material in the north-western corner of the site at depths between 2 and 3 mBGL. Additionally, metal exceedances of ecological criteria were recorded in the southern car park of the site in subsurface soil samples collected from BH33 and BH32.

Asbestos was detected in fill from BH30 located in the southern car park and within BH38 along the western boundary of the site. Of the 18 soil samples analysed only two had asbestos detects.
The soil findings largely corroborate the findings of previous site investigation (SGA, 2010), though the previous report also noted instances of PAHs in the southern carpark at concentrations that would exceed current health-based and ecological criteria.

Chemicals of concern including TRH, BTEXN and VOCs in groundwater samples collected across the site were reported below the adopted site assessment criteria. Copper, nickel and zinc concentrations were recorded above their respective guideline for the protection of marine ecosystems within the groundwater collected.

DISCUSSION AND CONCLUSION

It is WSP's opinion that the exceedances of health-based and ecological criteria are unlikely to pose a significant risk to current or future site users under the proposed land use settings.

The asbestos impacted soils at the site are most likely to have been imported in fill used to level the site. In its current state beneath the paved surfaces of the site the soil poses no unacceptable risk. However, it could present a potential health risk to intrusive maintenance workers and future construction workers. Therefore, any future earthworks undertaken as part of site redevelopment will need to have in place a protocol for management of asbestos finds and the final excavation should be cleared of asbestos as part of site validation.

REMEDIATION ACTION PLAN

Following the DSI works an RAP was compiled. Soil remediation options were evaluated and the excavation and off-site disposal of impacted soil was deemed the most suitable remedial option.

The process will include detailed *insitu* waste classification (or exsitu waste classification of stockpiled soil) before it is removed from the site.

Asbestos impacts should be addressed first, by appropriately licenced asbestos removal contractors, with controls and monitoring in place. Once the asbestos is removed the remaining fill can be removed in accordance with its waste classification.

Where excavations lie outside the proposed redevelopment excavation footprint and design levels require, reinstatement of site levels will be achieved using imported virgin excavated natural material (VENM) or excavated natural material (ENM).

Additionally, appropriate contingency plans and validation of completed works has been outlined within the RAP.

1 INTRODUCTION

Eloura Holdings Pty Ltd (Eloura) commissioned WSP Australia Pty Ltd (WSP) to undertake a detailed site investigation (DSI) and develop a remediation action plan (RAP) for 176-184 George Street, Concord West NSW. The purpose of the site investigation is to establish the current contamination status, to inform decisions about potential rezoning of the site allowing a change from commercial/industrial to medium density residential land use.

A DSI was been prepared for the site in 2010 by SGA Environmental (SGA, 2010). Based on the information of the DSI a RAP was prepared in 2012 by David Lane and Associates (DLA). Directions with regards to rezoning of the site were provided by Council. The majority of Councils concerns related to both the DSI and RAP being prepared with an ongoing commercial use in mind. For this reason, Council have requested that an updated DSI and RAP be prepared.

A high level geotechnical assessment was undertaken concurrently with this environmental assessment, and the findings of that assessment are provided in a separate report.

1.1 OBJECTIVES

The primary objectives of the DSI were to:

- review contemporary information on the sites environmental setting and updated history;
- assess the nature and extent of the soil contamination identified in previous studies, and close data gaps identified in those studies by conducting intrusive soil and groundwater investigations;
- assess the risk to future occupants under the to the proposed rezoning of the site for medium density residential use; and
- if the site is found to be unsuitable, provide recommendations for remediation or management to allow it to be used for the intended purpose.

The objectives of the RAP component of the investigation were to:

- document available options for the remediation (assuming contamination was discovered);
- provide details of the preferred remediation strategy;
- present a validation plan; and
- outline site specific environmental and work health and safety requirements for the management of contamination on the site during remedial works.

1.2 SCOPE OF WORKS

To achieve the above objectives the scope of works for the DSI assessment included:

- fieldwork preliminaries, comprising:
  - background review of available site specific information including (but not limited to) review of local geology, soil profile, topography and hydrogeology, contaminated site search, WorkCover records (provided in SGA report), licenced groundwater bore search and a review of historical aerial photographs, and findings of the previous study;
  - preparation of a health, environmental and safety plan (HESP);
  - a Dial Before You Dig (DBYD) underground utilities search;
- advancement of 19 soil investigation boreholes (targeted soil sampling) and logging of subsurface conditions;

- installation of four groundwater monitoring wells for subsequent groundwater sampling;
- laboratory analysis of selected soil samples for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), semi volatile chlorinated hydrocarbons (sVCPs) polychlorinated biphenyls (PCBs), heavy metals and asbestos; and
- preparation of this DSI report which documents the findings of the investigation.

The RAP component of the project was prepared with reference to the NSW EPA 2011 *Contaminated Sites: Guideline for Consultants Reporting on Contaminated Sites* and included:

- summary of contamination risks identified on-site;
- review of planned development works;
- a remediation options appraisal;
- detailed description of the recommended remediation approach, including a validation plan to demonstrate the site's suitability once remediation is completed; and,
- site specific environmental and work health and safety requirements.

2 SITE INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

Pertinent site details are provided in Table 2.1. The site location plan is presented in Appendix A, Figure 1, with the site layout plan presented in Figure 2. A summary of the surrounding land use within 1 km radius of the site is presented in Table 2.2.

Table 2.1 Site Details

ASPECT	DETAILS
Site Address	176-184 George Street, Concord West NSW
Legal description	Lots 4 to 12 and 15 to 16 in DP15973 and Lots 1 and 2 DP226350 (total of 13 Lots)
Local government	Canada Bay City Council
Current Zoning	IN1 – General industrial
Site Area	Approximately 8050m^2
Previous and current site use	Historically the site was used for commercial/industrial purposes. Of note was that Chippendale Printing Co. occupied the site from the early 2000's to 2010 and their activities on-site included the storage of chemicals, the use of wash down pits, storage of printing material and printing processes. At the time of investigation, the site was used as a set for a television program, with props for the program stored in the most southern portion of the warehouse.
Proposed site use	R3 – Medium density residential
Site description	A site walkover was conducted during utility surveying prior to intrusive works. The following features were noted: — The site comprises a large brick warehouse that occupies the largest portion of the site. The building on-site is approximately 5,257 m^2. During the site walkover, it was noted that the north-eastern section of the building was used as offices. — Two car parks are found in the most northern and southern portions of the site. The car parks are 517 m^2 and 1,630 m^2 respectively. — Majority of the site was found to have concrete surface cover except for a small garden and a grassed area found near the eastern property boundary. — No waste or storage of significant quantities of chemicals were observed during the site walkover, generally the site appeared to be well maintained.

Table 2.2 Surrounding land use

DIRECTION FROM SITE	IMMEDIATE VICINITY (<20M)	WITHIN 1 KM RADIUS
North	Residential properties and the Victoria Avenue Community Precinct (early childhood, childcare and public school facility)	Commercial and standard residential properties
East	George Street	Commercial buildings, railway with standard residential and golf course beyond.
South	Standard residential properties	Commercial and standard residential properties
West	Sport grounds of the Victoria Ave Community Precinct	Waterview Bicentennial Park and commercial properties

2.2 PREVIOUS ENVIRONMETAL INVESTIGATIONS

Previous environmental investigations have been undertaken at the site. The following reports were made available for WSP as part of this assessment:

- SGA Environmental 2010; *Detailed Site Investigation - 176-184 George Street Concord West, NSW*, reference 91949.
- DLA Environmental 2012; *Remediation Action Plan - 176-184 George Street Concord West 2134*, reference DL2853.

Since the abovementioned reports were prepared there have been changes to the key guidelines used for assessment of contaminated sites. This would need to be reflected in any site investigation and remediation planning documents prepared. The changes, in some instances go beyond the application of alternative criteria, to changes in the laboratory analytical methods (in particular around hydrocarbons).

In summary, the DSI (SGA, 2010) comprised of the advancement of 19 boreholes and targeted soil sampling. Exceedance of benzo(a)pyrene and total PAHs were recorded within samples collected from BH09 and BH10 at 3 m and 0.4 m below ground level (BGL) respectively. The samples collected for BH09 and BH10 were reported to contain ash, cinder and slag from the incomplete combustion of coal and clinker. It is believed that the material was used as fill material during historical levelling of the site in the most southern portion of the site. Additionally, leachability testing undertaken on the samples indicated that benzo(a)pyrene and total PAH are not leachable. SGA concluded that the site is suitable for commercial/industrial use if the site is left in its current state and exposure to the contamination in the most southern portion of the site is restricted. Historical soil impacts are presented in Appendix A, Figure 6.

The RAP (DLA, 2012) was based on the findings of the DSI mentioned above. The RAP was required by Canada Bay Council to be developed and implemented to remediate the site and surrounds if the site was to be redeveloped, to render them suitable for the proposed use. During a site risk assessment the RAP identified two main environmental concerns in regards to the site, the possible presence of USTs and a contamination hotspot in the southern car park. The RAP stated that a remedial works status report (2002) found that the USTs had not leaked but had yet to be decommissioned; however, during the DSI field investigation completed, service locating and Ground Penetrating Radar (GPR) was unable to conclusively indicate the presence or absence of the USTs in the area. In conclusion, the RAP:

- Selected a preferred remediation strategy – excavate and dispose.
- Presented an outline of the Environmental Management Plan (EMP) and associated contingency plans to ensure the environment is appropriately protected during the proposed works.

- Presented an information and consultation program to ensure the stakeholders are informed of the works as they proceed.
- Outlined the means of validation of completed works.

2.3 HISTORICAL AND CURRENT LAND USE INFORMATION

2.3.1 LAND ZONING

The local environmental plan (LEP) states that the IN1 zone objectives are as follows:

- to provide a wide range of industrial and warehouse land uses;
- to encourage employment opportunities;
- to minimise and adverse effect of industry another land uses; and,
- to support and protect industrial land for industrial uses.

The LEP states that the proposed R3 zone objectives are as follows:

- to provide for the housing needs of the community within a medium density residential environment;
- to provide a variety of housing types within a medium density residential environment; and,
- to enable other land uses that provide facilities or services to meet the day to day needs of residents.

2.3.2 HERITAGE SEARCH

A search of the state heritage register on 30 June 2018 indicated that there are no heritage items (state or local) that affect the subject site.

2.3.3 NSW EPA DATABASE SEARCH

A review of the most recent list of NSW contaminated sites notified to the EPA last updated on 16 April 2018, indicated that the subject site is not on the register and there are no sites which have been notified to the NSW EPA within a 1 km radius of the site. An online search of the NSW EPA Protection of the Environment Operations Act 1997 public register found no records of premises subject to an Environmental Protection Licence within 2 km radius of the site.

2.3.4 WORK COVER DANGEROUS GOODS RECORDS

WorkCover goods records of dangerous goods were provided in the SGA (2010) report and these records were reviewed. The following is a summary of the records reviewed:

- Licence number (unknown) – O'Donnell Griffin Pty Ltd – 23 March 1972.
  - shed – minerals spirits, mineral oil, Class 1 and Class 2 dangerous goods – 500 Gallons; and,
  - underground tank – 2 000 Gallons – mineral spirits.
- Licence number 000757 – O'Donnel Griffin Pty LTD – 11 February 1980.
  - roof package store – 7 000 litres for class 3.1, 3.2 and 3.3 dangerous goods; and,
  - underground tank – 16 200 litres petrol.
- Licence number 35/000757 – Grinnell Asia Pacific P/L and O'Donnel Griffin – 16 October 1998.
  - underground tank for 16 000 litres of petrol;
  - roof store for acetone – 20 litres;

- roof store for ethanol – 20 litres;
- roof store for paint – 1 500 litres;
- roof store for xylene – 200 litres;
- roof store for oil – 1 000 litres;
- stored in shed for araldite – 500 kg;
- stored in shed for hardener – 60 kg;
- stored in shed for methylated spirits – 40 litres;
- stored in shed for isonel 300 - 40 litres;
- stored in shed for xylene – 20 litres;
- stored in shed for mineral turps – 40 litres;
- stored in shed for acetone – 20 litres;
- stored in shed for eposolve 70 – 20 litres;
- stored in shed for N-Hexane #2 – 6.5 kg;
- stored in shed for MEK – 20 litres;
- stored in shed for bostik adhesive – 80 litres;
- stored in shed for bostik solvent – 40 litres; and,
- stored in shed for gloss enamel paint – 1 500 mls.

An application for renewal of licence number 35/000757 was issued and approved 28 February 2002 under the trading name of Chippendale Printing Company Pty Ltd.

- Licence number 35/000757 – Grinnell Asia Pacific P/L – 28 July 1993.
  - underground tank for 16 000 litres petrol;
  - roof stored for xylene HFP – 200 litres;
  - roof stored for electro solve – 200 litres;
  - roof stored for acrylic enamel – 300 litres;
  - roof stored for bearing oil – 60 litres;
  - roof stored for araldite hardener – 200 kg;
  - roof stored for bostik solvent – 80 litres;
  - roof stored for isonol – 40 litres;
  - roof stored for genesolv DMS – 300kg;
  - roof stored for eposolve 70 – 40 litres;
  - roof stored for acetone – 20 litres;
  - roof stored for metho – 40 litres;
  - roof stored for X60 solvent – 40 litres; and,
  - roof stored for polymer II – 60 kg.
- Licence number 35/000757 – Grinnell Asia Pacific P/L and O'Donnell Griffin – 14 October 1996.

- underground tank for 16 000 litres petrol;
- roof stored for xylene – 200 litres;
- roof stored for paint related material – 1 340 litres;
- roof stored for acetone – 20 litres;
- roof stored for ethanol – 40 litres; and,
- roof stored for petroleum oil – 40 litres.

It was stated in a certificate attached to the dangerous goods record that the 2 000 Gallon underground storage tank (UST) had been abandoned with the removal of all inflammable liquid, with the filling and sealing to the requirements of the Explosive Branch. The method of decommissioning was listed as water and rust inhibitor. No further decommissioning/removal details for any of the USTs were provided in the dangerous goods records obtained.

2.3.5 AERIAL PHOTOGRAPHS

Six aerial photographs, obtained from Land and Property Information were reviewed. Recent (2002 and 2012) aerial imagery, obtained from google earth, has also been reviewed. Details are summarised in Table 2.3. Aerial photographs are presented in Appendix C.

In summary, the site appears to be undeveloped until 1951. The site appears to be used for commercial/industrial purposes from 1951 to date. The site configuration has generally remained the same since 1951. The surrounding areas appears to have been gradually developed since 1930.

Table 2.3 Aerial photograph summary

YEAR	SITE	SURROUNDING AREA
1930	The site is undeveloped.	To the north, east and south residential properties are found. East of the site a golf course is found (today it is known as Concord Golf Club). Further south of the site commercial/industrial properties are found.
1951	The site remains unchanged.	The surrounding area remains mostly unchanged, except for an additional commercial/industrial building east of the site.
1970	It appears if the site has been developed and is used for commercial/industrial purposes. The building structure on-site is similar to the current building on-site.	The surrounding area remains mostly unchanged.
1978	The site remains unchanged.	The surrounding area remains mostly unchanged, with the addition of some commercial/industrial properties south of the site.
1986	The site remains unchanged.	The surrounding area remains mostly unchanged.
2002	The site remains unchanged.	The surrounding area remains mostly unchanged.
2012	The site remains unchanged.	The surrounding area remains mostly unchanged.

2.4 ENVIRONMENTAL SETTING

2.4.1 TOPOGRAPHY

Based on the New South Wales, Department of Lands Topographic Map Sheet 9030, 1:100 000 scale, the site is situated roughly 10 m above Australian Height Datum (mAHD). The topography in the area is relatively flat, with a slight slope to the west north-west.

2.4.2 HYDROLOGY

The site is located within the Parramatta River catchment and receives an annual rain fall of 1,000 mm.

Powell's Creek is the nearest surface water body, located approximately 200 m west of the site and flows from the south to the north. Powell's Creek serves as a tributary for the Parramatta River which is located approximately 1 km north of the site. West of Powell's Creek are various wetlands of the Bicentennial Park.

The site is almost fully paved or covered in buildings and hence the majority of rainfall on the site would be directed to the municipal stormwater. This would be discharged into Powell's Creek to the west.

2.4.3 GEOLOGY AND SOIL

GEOLOGY

Based on the Department of Mineral Resources Map Sheet 9130 (Sydney), 1nd Edition, 1:100 000 scale, dated 1983, the site is underlain by the Triassic aged (201 to 251 million years old) Ashfield Shale of the Wianamatta Group Sediments. Ashfield Shale is described as black to dark grey shale and laminite. The map indicates that man-made fill comprising, dredged estuarine sand and mud, demolition rubble, industrial and household waste adjoins the site to the west.

SOILS

The soils are described on the espade portal as belonging to the Blacktown soil landscape. These soils are formed on the gently undulating rises of the Wianamatta Group Shales and Hawkesbury Shales. The soils are typically shallow to moderately deep red and brown podzolic soils on crest, upper slopes and well-drained areas. Deep yellow podzolic soils and soloths are found on lower slopes and in areas of poor drainage. These soils are characterised by a friable sandy clay or loam topsoil overlying stiff clay subsoils which grade into weathered shale at depth.

ACID SULFATE SOILS

The DLWC, 1997 *Prospect/Paramatta River Acid Sulfate Soil Risk Map* (Edition 2) indicates that the majority of the site is on land listed as "no known occurrence" the western side of the site is on the boundary with "X2" land indicating filled land with an elevation of 2 to 4 metres, and therefore, if overlying alluvium is present it could possibly be affected by acid sulfate soils.

2.4.4 HYDROGEOLOGY

A review of the Hydrogeology of Australia 1:5,000,000 map (DRE, 1987) was undertaken to obtain general information about the regional aquifer beneath the site. According to the map, the regional aquifer has the following characteristics:

- the aquifer is porous; and
- is extensive with a low to moderate productivity.

Based on the geology and topography shallow perched groundwater may be present at the interface with fill or soil and the underlying shale geology. If present, this perched water is likely to discharge to Powell's Creek west of the site or percolated deeper into the weathered shale over time.

The regional groundwater is likely to be found within the underlying shale. The groundwater flow is likely to be in sympathy with the regional topography and as such from this site probably flows to the west or north-west, towards Powell's Creek and the Paramatta River.

According to the Department of Primary Industries database of registered groundwater bores, no groundwater abstractions are registered within 500 m of the site. Groundwater in the Wianamatta Shales is rarely suitable for potable supply due to its salinity, hardness and poor production rates. (Wooley, 1983).

3 SAMPLING AND ANALYSIS PLAN

3.1 SAMPLING PLAN AND RATIONALE

Sampling locations were selected to target areas of possible contamination identified during the previous investigation and with some locations placed for site coverage. Sample locations also took into consideration the presence of underground services and the physical limitations of subsurface conditions.

A total of 19 sampling locations, were selected based on the recommended number of sampling points for the approximately 8,000 m^2 site to detect a hotspot of contamination between 25 m diameter with 95% confidence (as per the NSW EPA, 1995 *Contaminated Sites: Sampling Design Guidelines)*. These were positioned within a grid arrangement following a stratified random sampling method.

Four of the boreholes drilled (BH30, BH34, BH35 and BH44) were converted to monitoring wells. Sampling locations and rationale are summarised in Table 3.1. Sampling locations are presented in Appendix A, Figure 3. A photographic record of site conditions encountered is presented in Appendix B. Additionally, historical soil sampling locations are presented in Appendix A, Figure 6.

Table 3.1 Sample rationale

LOCATION	DEPTH (mbgl)	TYPE	RATIONALE
BH30	10.0	Environmental soil, and groundwater + Geotechnical.	Targeting contamination hot spot identified in the SGA, 2010 report and site coverage for geotechnical investigation
BH31	2.8	Environmental soil borehole.	Targeting contamination hot spot identified in the SGA, 2010 environmental 2010 report
BH32	2.2	Environmental soil borehole.	Site coverage
BH33	2.8	Environmental soil borehole.	Targeting soils proximal historical USTs
BH34	8.0	Environmental soil, and groundwater.	Targeting soils proximal historical USTs and historical dangerous goods store
BH35	10.0	Environmental soil, and groundwater + Geotechnical.	Targeting soils proximal historical USTs and site coverage for geotechnical investigation
BH36	2.2	Environmental soil borehole.	Site coverage
BH37	3.0	Environmental soil borehole.	Site coverage
BH38	3.2	Environmental soil borehole.	Site coverage
BH39	3.5	Environmental soil borehole.	Site coverage
BH40	3.0	Environmental soil borehole.	Site coverage
BH41	3.0	Environmental soil borehole.	Targeting area proximal historical varnish pit and wash down bay
BH42	4.2	Environmental soil borehole.	Targeting area proximal historical varnish pit and wash down bay
BH43	3.0	Environmental soil borehole.	Targeting area proximal historical varnish pit and wash down bay

LOCATION	DEPTH (mbgl)	TYPE	RATIONALE
BH44	10.0	Environmental soil, and groundwater + Geotechnical.	Targeting area proximal historical varnish pit and wash down bay and site coverage for geotechnical investigation
BH45	3.0	Environmental soil borehole.	Site coverage
BH46	2.2	Environmental soil borehole.	Site coverage
BH47	1.0	Environmental soil borehole.	Site coverage
BH48	1.0	Environmental soil borehole.	Site coverage

3.2 METHODOLOGY

3.2.1 GENERAL

Prior to the fieldworks, a site specific health, environment and safety plan (HESP) was developed for the investigation works. All works on the site were undertaken in accordance with the HESP and safe work method statements (SWMS).

A site walkover was conducted at the site prior to intrusive works. The findings are documented in Table 2.1. All site locations were cleared by a suitably qualified service locator prior to the commencement of intrusive works on 16 July 2018, utilising Dial Before You Dig (DBYD) plans provided by asset owners. WSP staff conducted the intrusive works on 19 and 20 July 2018. Groundwater sampling and monitoring was completed on 26 July 2018, allowing groundwater within the newly installed monitoring wells to equilibrate with the surrounds.

3.2.2 FIELDWORK

The fieldworks methodologies adopted during the DSI were consistent with WSP's field procedures. These have been summarised in Table 3.2.

Table 3.2 Field methodology

ASPECT	DETAILS
Service location	Prior to breaking ground, all investigation locations were checked for the presence of buried services by an experienced service locator and cross checked with the DBYD plans obtained from all asset owners.
Concrete coring	18 locations were concrete cored by an experienced drilling contractor. Concrete thickness varied across the site and ranged between 0.15 to 0.3 m thick as shown in borelogs (Appendix D).
Drilling method	All environmental boreholes were advanced to their targeted depth by means of push tube using a track mounted Geoprobe drill rig. Geotechnical boreholes were advanced with continuous solid flight augers, and extended into the bedrock using NMLC drilling techniques. Where locations were in the vicinity of services the upper 1.5m was advanced by hand auger. The BH34 push tube sample location was reamed with augers and once refusal was encountered, the borehole was advanced with air hammer to the required depth. this method was different to other wells as the location was not required to be a geotechnical location and hence coring was not necessary.

Soil logging and field screening	At each sampling location, the soil was described in an exploratory borehole log. The description for each layer included whether the soil was of likely fill or natural origin, the soil colour and texture, and any notable inclusions or foreign material. The logs also provide a record of any visual and olfactory evidence of contamination, if observed. Soil samples were screened in the field using a photo-ionisation detector (PID) to assess whether volatile organic compounds (VOCs) were present. The PID was calibrated to a known concentration of isobutylene gas at the commencement of the field work. The soil descriptions are provided in Appendix D.
Soil sampling method	Soil samples were collected directly from the hand auger or push tube using disposable nitrile gloves. All samples collected were placed in dedicated laboratory supplied containers. Soil samples were generally collected from the following depths: — surface (0.0-0.1 mBGL); — near surface (0.3-0.5 mBGL); — 0.9 to 1.0 mBGL — nominal 1 m intervals after 1 mBGL up to a maximum depth of 3 mBGL; — at changes in lithology or evidence of contamination.
Borehole backfilling	All boreholes were backfilled with excess soils originally encountered and capped by reinstating the concrete cores. Concrete cores were rammed into the underlying soil and topped with fresh concrete to be flush with ground level to ensure that these do not pose as a trip hazard.
Monitoring well installation	Groundwater monitoring wells were constructed using Class 18 flush-jointed polyvinyl chloride (PVC) casing and screened with machine-slotted PVC pipe with an outside diameter of 50 mm. Monitoring wells were installed within BH30, BH34, BH35 and BH44. All monitoring wells were completed with a trafficable road box. No groundwater seepage was encountered within BH34. Furthermore, due to the NMCL drilling techniques used during the advancement of BH30, BH35 and BH44 seepage zones could not be identified within these boreholes. Details of monitoring well installations are provided in Appendix D. Wells BH30, BH35 and BH44 were developed subsequent their construction using dedicated high-density polyethylene (HDPE) bailer. BH30 and BH44 were bailed dry, with 80 litres removed from BH35. BH34 was not developed as the monitoring well was dry.

Groundwater sampling method	Before samples were taken, all monitoring wells were gauged to measure standing water level and to identify the presence of LNAPL using an air-oil-water interface probe. WSP staff gauged two existing monitoring wells and the four newly installed monitoring wells. Groundwater samples were collected by a no-purge method using a dedicated HydraSleeve™ sampler at each sampling location. Monitoring wells BH30, BH34 and EXW02, located to the south -western corner of the site, were found to be dry. Monitoring wells BH35, BH44 and EXW01 had sufficient groundwater for sampling. Water quality parameters including pH, dissolved oxygen (DO), reduction/oxidation potential (redox), electrical conductivity (EC) and temperature were measured on a subsample collected from the HydraSleeve™, using a water quality meter appropriately calibrated prior to use. Groundwater was visually assessed for turbidity and evidence of contamination, such as odour, discolouration or visible hydrocarbon sheen. Field results are presented and discussed in Section 6.3. Groundwater sampling was carried out in accordance with the *Australian standard Australian/New Zealand Standard – Water Quality sampling, Part 11: Guidance on sampling of ground waters, AS/NZS 5667.11, 1998*.
Sample preservation	Samples were stored in an insulated cooler box with ice immediately after sampling. Samples were kept chilled prior to and during delivery to the selected National Association of Testing Authorities (NATA) accredited laboratory via a courier under appropriate 'chain of custody' documentation.
Decontamination	All reusable sampling equipment was cleaned between each sampling location using deionised water and a phosphate free detergent (Decon 90).
Quality assurance / quality control (QA/QC)	One intra-laboratory and one inter-laboratory soil samples, were collected and analysed to assess laboratory precision and accuracy. One trip blank and trip spike accompanied each shipment of samples during the entire journey from the preparing laboratory to the field sampling location, and back to the analytical laboratory. These were to assess for potential volatile losses and the ensure no cross contamination in transit occurred.

3.3 LABORATORY ANALYSIS

Primary soil samples were submitted to SGS Australia (SGS) and secondary soil samples were sent to ALS laboratory (ALS) for analysis. All laboratories are accredited by NATA for the analyses conducted except for asbestos quantification for which no accreditation exists. A summary of samples and analyses is provided in Table 3.3. Results are discussed in Section 6. Laboratory certificates are presented in Appendix H.

Table 3.3 Soil and groundwater laboratory analyses summary

ANALYTE	PRIMARY	DUPLICATES
Soil Samples		
TRH/BTEX/PAHs	39	1
8 heavy metals	39	1
OCP/PCBs	18	-
sVCHs	18	-
Asbestos (presence/absence)	18	-
Groundwater Samples		
TRH/BTEXN	3	-
VOCs	3	-
8 heavy metals	3	-

Note: In addition, two trip blanks and trip spikes were analysed for TRH, BTEX.

4 SOIL ASSESSMENT CRITERIA

To assess the contamination status, the NSW EPA refers to National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM; as amended 2013). NEPM Schedule B1 (*Guideline on Investigation Levels For Soil and Groundwater*) provides a framework for the use of investigation and screening levels based on a matrix of human health and ecological risks.

4.1 HEALTH BASED CRITERIA

Schedule B1 of the NEPM (2013) defines health investigation levels (HILs) that have been developed for a broad range of metals and organic contaminants in soil. HILs are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 or 'screening') of an assessment of potential risks to human health from chronic exposure to contaminants. The HILs are applicable to all soil types and generally apply to the top 3 m of soil. HILs have been developed for four generic land use settings:

- HIL A: Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools);
- HIL B: Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats;
- HIL C: Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary school fields and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate; and,
- HIL D: Commercial/industrial such as shops, offices, factories and industrial sites.

Taking into consideration the objectives and purpose of the investigation, it is considered appropriate to assess the site based on its proposed future uses, which is to redevelop the site to medium density residential apartments. Furthermore, discussions with the client has indicated that majority of the site would be excavated for basement parking and all other areas containing fill material would be excavated and removed during the development of the site. Therefore, residential screening criteria for sites with minimal opportunities for soil acess (HIL B) will be adopted (the intended future use) as well as commercial/industrial (HIL D) (current use). The HIL criteria have been summarised in Table 4.1.

Table 4.1 Soil HILs for residential and commercial/industrial land use

ANALYTE	HIL B, RESIDENTIAL - MINIMAL SOIL ACCESS (mg/kg)	HIL D, COMMERCIAL/INDUSTRIAL (mg/kg)
Heavy Metals and Metalloids		
Arsenic	500	3,000
Cadmium	150	900
Chromium	500	3,600
Copper	30,000	240,000
Lead	1,200	1,500
Mercury	120	730
Nickel	1,200	6,000
Zinc	60,000	400,000

ANALYTE	HIL B, RESIDENTIAL - MINIMAL SOIL ACCESS (mg/kg)	HIL D, COMMERCIAL/INDUSTRIAL (mg/kg)
Polyaromatic hydrocarbons		
Benzo(a)pyrene toxicity equivalence quotient (BaP TEQ)	4	40
Total PAHs	400	4,000
Pesticides and Polychlorinated biphenyls		
Total PCBs	1	7
DDT + DDE+DDD	600	3,600
Aldrin and dieldrin	10	45
Chlordane	90	530
Chlorpyriphos	340	2,000
Endosulfan	400	2,000
Endrin	20	100
HCB	15	80
Heptachlor	10	50
Mirex	20	100
Methoxychlor	500	2,500

Health screening levels (HSLs) are applicable to the assessment of vapour intrusion risks arising from petroleum hydrocarbons in contaminated soil. The adopted carbon fraction ranges for the HSLs are based on total recoverable hydrocarbon (TRH) concentrations after subtraction of benzene, toluene, ethylbenzene and xylene (BTEX) compounds, and naphthalene.

The HSLs methodology provides for a greater range of site circumstances including the depth of contamination and soil texture. These HSLs have been developed for sand, silt and clay soils based on soil texture classifications. Where there is reasonable doubt as to the appropriate soil texture to select, either a conservative selection should be made (i.e. select coarsest applicable grain size such as sand) or laboratory analysis carried out to determine particle size and hence soil texture sub-class. For the purposes of this investigation, the most conservative approach will be selected and the adopted assessment criteria will be based on a subsurface profile comprising sand. The HSLs have been incorporated in Schedule B1 in the context of a wider site assessment framework for petroleum hydrocarbon contamination. The adopted petroleum assessment criteria for soil have been provided in Table 4.2 and Table 4.3.

Table 4.2 Soil HSLs for vapour intrusion for low to high density residential

ANALYTE	HSL A&B - LOW TO HIGH DENSITY RESIDENTIAL USE IN SAND (mg/kg)[1]			
	0 TO <1 m	1 m to <2 m	2 m to <4 m	≥4 m
F1: TRH C_6-C_{10} less BTEX	45	70	110	200
F2: TRH >C_{10}-C_{16} less naphthalene	110	240	440	NL[2]
Benzene	0.5	0.5	0.5	0.5
Toluene	160	220	310	540
Ethylbenzene	55	NL	NL	NL

ANALYTE	HSL A&B - LOW TO HIGH DENSITY RESIDENTIAL USE IN SAND (mg/kg)[1]			
	0 TO <1 m	1 m to <2 m	2 m to <4 m	≥4 m
Xylenes	40	60	95	170
Naphthalene	3	NL	NL	NL

Notes:

1 Soil type of sand is adopted here as a conservative approach.

2 NL – not limiting i.e. the soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

Table 4.3 Soil HSLs for vapour intrusion for commercial/industrial land use

ANALYTE	HSL D - COMMERCIAL/INDUSTRIAL USE IN SAND (mg/kg)[1]			
	0 to <1 m	1 m to <2 m	2 m to <4 m	≥4 m
F1: TRH C_6-C_{10} less BTEX	260	370	630	NL
F2: TRH >C_{10}-C_{16} less naphthalene	NL[2]	NL	NL	NL
Benzene	3	3	3	3
Toluene	NL	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	NL	NL	NL	NL
Naphthalene	NL	NL	NL	NL

Notes:

1 Soil type of sand is adopted here as a conservative approach.

2 NL – not limiting i.e. the soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

The NEPM guidelines supersede the CRC CARE guidelines for all site uses with the exception that there are no NEPM guidelines for vapour intrusion into trenches and direct contact – intrusive maintenance workers. The screening criteria for intrusive maintenance workers are summarised in Table 4.4.

Table 4.4 Soil health levels for direct contact - intrusive maintenance workers

CHEMICAL	HSL FOR MAINTENANCE WORKERS - DIRECT CONTACT (mg/kg)
F1: TRH C_6-C_{10} less BTEX	82,000
TPH >C_{10}-C_{16}	62,000
TPH >C_{16}-C_{34}	85,000
TPH >C_{34}-C_{40}	120,000
Benzene	1,100
Toluene	120,000
Ethylbenzene	85,000
Xylenes	130,000
Naphthalene	29,000

The NEPM, 2013 also provides HSLs for asbestos in soil and are based on land use and asbestos type. The adopted assessment criteria for asbestos is summarised in Table 4.5.

Table 4.5 Soil HSLs for asbestos for residential and commercial/industrial land use

ANALYTE	HSL B, RESIDENTIAL	HSL D, COMMERCIAL/INDUSTRIAL
Bonded asbestos in soil (>7mm ACM)	0.04 (%w/w)	0.05 (%w/w)
Friable asbestos and asbestos fines in soil (<7mm)	0.001 (%w/w)	
Surface lying asbestos (all forms)	None visible	

4.2 ECOLOGICAL BASED CRITERIA

The NEPM (2013) outlines ecological investigation levels (EILs) developed for selected metals and organic substances. These are applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2 m of soil. EILs have been developed for three generic land use settings:

- areas of ecological significance;
- urban residential areas and public open space; and,
- commercial and industrial land uses.

The methodology for developing EILs assumes that the ecosystem present at the site is adapted to the ambient background concentration (ABC) for the locality and that it is only adding contaminants over and above this background concentration which has an adverse effect on the environment. The ABC of a contaminant is the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity not attributed to industrial, commercial, or agricultural activities, for example, motor vehicle emissions.

An added contaminant limit (ACL) is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. The EIL is derived by summing the ACL and the ABC and should this be exceeded, further appropriate investigation and evaluation of the impact on ecological values may be required. ACLs are based on the soil characteristics of pH, CEC, iron and clay content.

Site specific EILs for chromium (III), copper, nickel and zinc have been calculated using the CSIRO Ecological Investigation Level Calculation Spreadsheet provided online in the ASC NEPM Toolbox (http://www/scew.gov.au/node/941) using an arbitrary Cation Exchange Capacity (CEC) of 13 centimoles/kg, and the average calculated pH (6.4) of the soil at the site. The calculated EILs are presented in Table 4.6.

Table 4.6 Soil EILs for residential and commercial industrial land use

ANALYTE	RESIDENTIAL USE (mg/kg)[1]	COMMERCIAL/INDUSTRIAL USE (mg/kg)[1]
Arsenic	100	160
Chromium	410	670
Copper	280	310
Lead	1,100	1,800
Nickel	200	350

ANALYTE	RESIDENTIAL USE (mg/kg)[1]	COMMERCIAL/INDUSTRIAL USE (mg/kg)[1]
Zinc	570	850
Naphthalene	170	370
DDT	180	640

Notes:

1 EIL = ABC + ACL

Ecological screening levels (ESLs) have also been developed for selected petroleum hydrocarbon compounds and TRH fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse and fine grained soils and various land uses and, like EILs, are generally applicable to the top 2 m of soil. Natural soils underlying the site are clays and silty clays; however, heterogeneous fill material of various textures were encountered at the site up to depths of 3.0 m BGL and therefore the most conservative approach will be selected and the adopted assessment criteria will be based on a subsurface profile comprising coarse soil textures. The ESL thresholds for both residential and commercial/industrial sites are outlined in Table 4.7.

As with health based screening levels, these criteria are screening criteria only; exceedances of these criteria are triggers to undertake additional assessment of the risk to terrestrial ecosystems.

Table 4.7 Soil ESLs for residential and commercial/industrial land use

ANALYTE	RESIDENTIAL USE IN SAND ESL (mg/kg)	COMMERCIA/INDUSTRIAL USE IN SAND ESL (mg/kg)
TRH C_6-C_{10} minus BTEX (F1)	180	215
TRH >C_{10}-C_{16} (F2)	120	170
TRH >C_{16}-C_{34} (F3)	300	1,700
TRH >C_{34}-C_{40} (F4)	2,800	3,300
Benzene	50	75
Toluene	85	135
Ethylbenzene	70	165
Total xylene	105	180
Benzo(a)pyrene	0.7	0.7

5 GROUNDWATER ASSESSMENT CRITERIA

5.1 HEALTH BASED CRITERIA

Schedule B1 of the NEPM (2013) defines groundwater investigation levels (GILs) that have been developed for a broad range of metals and organic contaminants in groundwater. Health-based GILs are based on the National Health and Medical Research Council (NHMRC)/National Resource Management Ministerial Council (NRMMC) 2011, *Australian Drinking Water Guidelines*.

Given the site is located on the Wianamatta Group sediments, known to have high salinity, and given no registered groundwater bores are in the vicinity, GILs for drinking water are considered irrelevant.

Schedule B1 does, however, provides a framework for assessing the human health risk from petroleum compounds and fractions via the inhalation pathway which is considered relevant to the site. These criteria are health screening levels (HSLs). The adopted carbon fraction ranges for the HSLs are based on TRH analysis after subtraction of BTEX compounds and naphthalene.

The HSLs are divided into four generic land use settings which range from low density residential (HSL A) to commercial/industrial sites (HSL D). The HSL methodology also further specifies subsurface profile, with criteria presented for sand, silt and clay soils at several depth intervals. Where there is reasonable doubt as to the appropriate soil texture to select, either a conservative selection should be made (i.e. sand) or laboratory analysis carried out to determine particle size and hence soil texture sub-class.

Table 5.1 Groundwater HSLs for vapour intrusion

ANALYTE	HSL A&B LOW TO HIGH RESIDENTIAL USE IN SAND (mg/l)[1]		HSL D, COMERCIAL/INDUSTRIAL USE IN SAND (mg/l)[1]	
	4 to <8 m	8 m+	4 to <8 m	8 m+
F1: TRH C_6-C_{10} less BTEX	1	1	6	7
F2: TRH >C_{10}-C_{16} less naphthalene	1	1	NL	NL
Benzene	0.8	0.9	5	5
Toluene	NL	NL [2]	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	NL	NL	NL	NL
Naphthalene	NL	NL	NL	NL

Notes:

1 Soil type of sand is adopted here as a conservative approach.

2 NL – not limiting i.e. the soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario.

5.2 ECOLOGICAL CRITERIA

The NEPM GILs do not provide data for all BTEX compounds; however, as the GILs are based on the ANZECC/ARMCANZ (2000) water quality guidelines, low reliability trigger values for fresh and marine waters from for BTEX compounds can be considered.

The relevant GILs (i.e. freshwater versus marine) were selected based on the closest receiving aquatic receptors which were local tidal creeks. Therefore, the Marine criteria are considered most relevant.

Table 5.2 Groundwater investigation levels for freshwater

ANALYTE	GROUNDWATER INVESTIGATION LEVELS (ug/l)
	MARINE [1]
Metals and Metalloids	
Arsenic	13*
Cadmium	0.7
Copper	1.3
Chromium (VI)	4.4
Lead	4.4
Mercury	0.1
Nickel	7
Zinc	15
Chlorinated Alkanes	
1,1,2-Trichloroethane	1,900
Chlorinated Benzenes	
1,2-Dichlorobenzene	160*
1,3-Dichlorobenzene	260*
1,4-Dichlorobenzene	60*
1,2,3-Trichlorobenzene	3*
1,2,4-Trichlorobenzene	20
Monocyclic Aromatic Hydrocarbons	
Benzene	500
Xylene (as per o-xylene)	350*
Xylene (as per p-xylene)	200*
Naphthalene	50

Notes:

1 Investigation levels apply to typical slightly-moderately disturbed systems.

2 * Freshwater criteria adopted as no marine criteria available.

6 RESULTS AND DISCUSSION

6.1 SUBSURFACE CONDITIONS

A summary of the subsurface geological profile encountered at the site is presented in Table 6.1. Exploratory borehole logs are included in Appendix D.

Table 6.1 Summary of subsurface conditions

DEPTH (MBGL)	GENERAL SOIL DESCRIPTION
0.0 to 0.25	Concrete hard standing
0.25 to 1.0 – 3.0	Fill: Heterogeneous material was encountered across the site. Material generally ranged from reworked light grey-brown to dark brown black; fine to medium grained; silty sand, silty clay, and clay with gravel. Coal ash, cinder and clinkers were encountered, particularly along the north and western boundaries of the site.
0.5 to 1.5	Natural: Yellow-grey brown to red brown, dry to slightly moist, fine grained, soft, silty clays.
1.5 to 3.0	Natural: Grey-yellow red, dry to slightly moist, fine grained, soft to stiff, slickensided clays and silty clays. Sub-angular shale fragments were encountered within some of the exploratory hole positions.

The soil type described above is not consistent with acid sulfate soils. Acid sulfate soils are of estuarine origin and found below the water table and are generally grey to dark grey in colour. The soils described are largely consistent with residual clays formed from the weathering of underlying shale. Moreover, the majority of natural soil logged was noted to be mottled indicating oxidised conditions, and were dry to the depth of rock.

One borehole (BH37) had a slightly different natural profile and terminated in a wet dark to black coloured layer. Possibly this location may have been a prior stream that could have contained marine sediments. Such sediments could potentially be acid sulfate soils. If encountered during future development works these materials should be assessed for the risk and managed accordingly.

6.2 SOIL FIELD SCREENING

During the advancement of exploratory boreholes PID screening detected VOC concentrations at various depths within BH34-BH38 and within BH40-BH42. The VOCs were recorded within BH35-BH38 and BH40 and is most likely associated with the historical UST infrastructure found in these areas. The exact source of the volatiles recorded within BH40, BH41 and BH42 is unknown, however the volatiles may be attributed to the quality of fill imported to the north-western portion of the site. BH34 is located proximal the historical chemical store and is also downgradient of the historical UST infrastructure. Exploratory borehole logs with field screening results is presented in Appendix D.

6.3 GROUNDWATER CONDITIONS

The groundwater conditions encountered at the site are summarised in Table 6.2. Monitoring wells EXW01 (pre-existing well), BH35 and BH44 were sampled, with monitoring well BH34 found to be dry at the time of sampling. Furthermore, BH30 was found to have an obstruction at 6.14 mBGL and therefore, the monitoring well was found to be dry at that depth, at the time of sampling.

Table 6.2 Summary of groundwater conditions

PARAMETER	RESULTS
Depth to groundwater	Depth to groundwater was measured between 4.29 and 6.06 mBTOC.
LNAPL occurrence	No LNAPL was measured during gauging. No hydrocarbon sheens or odours were reported during sampling. Groundwater within EXW01, BH35 and BH44 was turbid.
Groundwater quality	The field parameters measured during the GME found the following: — EC measurements ranged from 1,433 (BH44) which is relatively fresh, to 25,700 µS/cm (BH35) which is saline; — redox measurements ranged from 218 (BH35) to 313 mV (EXW01), indicating oxidising conditions. Redox potential values collected in the field have been corrected to standard hydrogen electrode values by adding 199 mV to each reading; — pH readings ranged from 6.99 (EXW01) to 7.61 (BH44) indicating neutral water conditions; — DO measurements ranged from 2.71 (EXW01) to 5.10 ppm (BH44), indicating poorly oxygenated groundwater; and, — temperature measurements ranged from 17.6 (BH35) to 18.8 ºC (EXW01).

Groundwater gauging data and field parameters are summarised in Table F1 and F2 in Appendix F.

6.4 SOIL CONTAMINANTS OF CONCERN

Soil samples from across the site were variously submitted for the analysis of TRH, BTEX, PAHs, sVCHs, OCPs, PCBs, heavy metals and asbestos. Summary results are presented in Appendix E. Laboratory certificates are provided in Appendix H. The following provides a summary of the key findings.

6.4.1 TRH/BTEXN

TRH/BTEXN were analysed within 39 soil samples collected at surface and between 0.5 and 3.0 mBGL across the site, targeting the fill material encountered on-site.

In general, the results for TRH were less than the laboratory's limit of reporting (LOR) with detections only made in six samples collected (BH30_0.9-1.0, BH31_0.2, BH34_4.0, BH39_0.3, BH39_1.0 and BH43_0.4). None exceeded the health-based criteria. The only recorded exceedance of an ecological criteria was the concentration of F3:>C_{16}-C_{34} recorded within the soil sample BH30_0.9-1.0. This result was recorded above the ESL criteria for urban residential and public open space; however, did not exceed the ESL criteria for commercial/industrial.

BTEXN concentrations were generally recorded below the LORs with detections only made within three samples collected (BH35_0.9-1.0, BH35_2.0 and BH43_0.4). None of the BTEXN concentrations recorded within all the samples collected exceeded either health based or ecological screening criteria. The soil impact plan is presented in Appendix A, Figure 5.

6.4.2 SVCH

sVCHs were analysed within 18 soil samples collected across the site at various depths ranging from 0.1 to 3.0 mBGL generally targeting the fill material on-site.

None of the sVCHs concentrations recorded exceeded their respective LORs and therefore no recorded concentrations exceed the health or ecological screening criteria.

6.4.3 PAH

PAHs (including benzo(a)pyrene) were analysed within 39 soil samples collected across the site.

PAHs were frequently recorded above the LORs across the site at various depths; however, none of the concentrations recorded exceeded health based criteria, and only one exceeded the ecological screening criteria for Benzo(a)pyrene (BH31_2.0).

6.4.4 HEAVY METALS

Soil samples were collected at 39 locations at various depths for their subsequent laboratory analysis of heavy metals. Heavy metals were reported within all 39 soil samples collected. No results exceeded the adopted health based criteria for either commercial/industrial or residential (with minimal opportunities for soil access) use.

Copper concentrations were recorded above the ecological investigation levels (EILs) for urban residential and commercial/industrial land use within soil samples BH31_2.0, BH33_0.5, BH41_3.0 and BH43_3.0. Additionally, the zinc concentration within soil sample BH43_3.0 exceeded its EILs for urban residential and commercial/industrial use.

6.4.5 OCP AND PCB

OCPs and PCBs were analysed within 18 samples collected across the site. The OCP or PCB concentrations were recorded below their respective LORs, with the exception of a minor detect of DDT and DDE within BH39_0.3, and the PCB Arochlor 1260 in BH30_0.9-1.0. None of these exceeded the adopted health or ecological investigation levels.

6.4.6 ASBESTOS

Soil samples collected from 18 locations across the site were screened for the presence of asbestos. Asbestos was identified at two locations on-site. Amosite and Chrysolite was detected within BH30_0.9-1.0, in the most southern corner of the site. Furthermore, Amosite and Chrysolite was detected within BH38_0.5, in the centre of the site along the site's western boundary. Asbestos was not detected within any of the other soil samples collected at the site. The asbestos impact plan is presented in Appendix A, Figure 4.

6.5 GROUNDWATER CONTAMINANTS OF CONCERN

Groundwater samples collected from three monitoring wells (EXW01, BH35 and BH44) were submitted for the analysis of TRH, BTEXN, VOCs and heavy metals. Summary results are presented in Appendix F. Laboratory certificates are provided in Appendix H. The following provides a summary of the key findings.

6.5.1 TRH/BTEXN

TRH and BTEXN was detected above LOR within samples collected from BH35 and BH44. Nonetheless, all results were less than available human health or ecological guidelines.

6.5.2 VOC

Generally, VOC concentrations were recorded below their respective LORs. Only MTBE, 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene were recorded at relatively low levels within samples collected from BH35 and BH44 for which there are no Australian guidelines. No VOCs were recorded above available guidelines.

6.5.3 HEAVY METALS

Various heavy metals were detected within all three groundwater samples collected – though cadmium, chromium, lead and mercury were non-detect in all locations. Of the detects:

- Arsenic was recorded above its LOR within groundwater collected from BH35 and BH44; however, the concentrations did not exceed adopted ecological criteria.

- Copper was recorded within the groundwater sample from BH44 at a concentration that marginally exceeded the ecological guideline.
- Nickel and zinc were recorded above their respective guidelines for the protection of freshwater ecosystems within groundwater collected from EXW01 and BH35.

A map of groundwater impacts is presented in Appendix A, Figure 7.

7 QUALITY ASSURANCE / QUALITY CONTROL

7.1 FIELD DATA QUALITY INDICATORS

The data quality indicators (DQIs) for any validation and monitoring events are presented in Table 7.1.

Table 7.1 DQI performance

DQI	ITEM	CONFORMANCE
Precision (a quantitative measure of the variability (or reproducibility) of data)	SOPs appropriate and complied with	Yes
	Duplicate samples analysed	Yes
Accuracy (bias) (a quantitative measure of the closeness of reported data to the true value)	SOPs appropriate and complied with	Yes
Representativeness (the confidence (expressed qualitatively) that data are representative of each media present on the site)	Appropriate media sampled according to proposal	Yes
	All media identified in proposal sampled	Yes
Completeness (a measure of the amount of useable data from a data collection activity)	All critical locations sampled	Yes
	WSP documented procedures which are based on accepted industry standard practices complied with	Yes
	Experienced samplers	Yes
	Correct documentation	Yes
Comparability (the confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event)	Same standard operating procedures (SOPs) used on each occasion	NA
	Experience sampler	Yes
	Climatic conditions (temperature, rainfall, etc.)	NA
	Same type of samples collected	NA

7.2 LABORATORY DATA QUALITY INDICATORS

The laboratory data quality indicators are presented in Table 7.2.

Table 7.2 Laboratory data quality indicators

DQI	ITEM	CONFORMANCE
Precision	Analysis of laboratory duplicates	Yes – Lead, chromium and nickel within the BH40_0.3 sample exceeded the RDP as well as chromium within BH36_1.0 exceeded the RDP. However, considering the low concentrations, low PQL and heterogeneous nature of the fill material across the site these exceedances are permissible.
	Analysis of field duplicates	Yes (Analytical results presented in Appendix F).
	Analysis of laboratory prepared trip spikes	Yes (Analytical results presented in Appendix F).
	Analysis of laboratory prepared trip blank	Yes (Analytical results presented in Appendix F).
Accuracy (bias)	Analysis of rinsate blanks (one per batch)	N/A – no rinsate blank was analysed during this investigation as dedicated equipment used
	Analysis of reagent blanks	Yes - Refer to laboratory certificates of analysis
	Analysis of method blanks	Yes - Refer to laboratory certificates of analysis
	Analysis of matrix spikes and matrix spikes duplicates	Yes – The recovery of copper within BH31_2.0 exceeded the suggested criteria; however, considering the low PQLs and the heterogeneous nature of the fill material encountered these exceedances are permissible.
	Analysis of surrogate spikes and laboratory-prepared spikes	Yes - Refer to laboratory certificates of analysis
	Analysis of reference materials/control samples	Yes - Refer to laboratory certificates of analysis
Representativeness	All relevant samples analysed	Yes
Completeness	All critical locations sampled	Yes
	All contaminants of concern analysed	Yes
	Appropriate methods and quantitation limits	Yes
	Sample documentation complete	Yes
	Sample holding times complied with	Yes
Comparability	Sample analytical method used	Yes
	Sample PQL (justify or quantify if different)	Yes
	Same laboratories	NA – only one sampling event
	Same units	Yes

7.3 FIELD DUPLICATES

The purpose of duplicate samples are to estimate the variability of a given characteristic or contaminant associated with a population. Two duplicate soil samples were collected for analysis; one soil sample was analysed as an intra-laboratory duplicate and one soil sample as an inter-laboratory duplicate. Duplicate samples were labelled to conceal their relationship to the primary sample from the laboratory.

Field duplicate soil samples were collected from soil immediately adjacent to the primary sample by placing approximately equal portions of the primary sample into two sample jars.

Relative percentage differences (RPDs) were calculated for the primary and duplicate samples for assessment of the data quality, in particular for assessment of the reproducibility of the analytical data measurements or 'precision' given the adopted field and laboratory methods. The RPDs were calculated using the formula below.

$$RPD\% = \frac{|Ro - Rd|}{|(Ro + Rd)/2|} \times 100\%$$

where Ro is the primary sample and Rd is the primary duplicate.

The RPD values were compared to the 30% RPD acceptance criterion outlined in NEPM, 2013. RPDs for results less than the laboratory PQL were not calculated.

RPD calculated for TRHs in the inter-laboratory duplicate were above 30% for $>C_{10}$-C_{16} and $>C_{16}$-C_{34}. The RPD calculated for fluoranthene and pyrene within the intra-laboratory duplicate were above 30%. Considering that TRHs and PAHs were not recorded at high concentrations and that duplicate samples were collected in heterogeneous fill material, the RPD exceedances recorded do not pose a concern in regards to data quality.

Trip blanks were supplied for the investigation by SGS laboratory, one for the intrusive works and one for the groundwater sampling. Both trip blanks were taken to site and returned to the laboratory unopened. The trip blanks showed TRH and BTEXN concentration lower than the LOR, indicating that cross-contamination during sample storage and transportation is unlikely. Additionally, two trip spikes were prepared by the laboratory and taken to site, where after it was returned to SGS unopened. The trip spikes showed recovery percentages of between 84% and 124%, which is deemed acceptable indicating minimal volatile losses in transit. Tabulated QA/QC results are presented in Table G1 and G2, Appendix G.

7.4 SUMMARY OF QA/QC

The sampling methods (including sample preservation, transport and decontamination procedures) and laboratory methods followed during the investigation were consistent with WSP's protocols. The QA/QC results indicate that the DQO's were achieved and that the data is valid to confirm the site baseline conditions.

8 SITE INVESTIGATION DISCUSSION

8.1 SOIL – CONTAMINANTS OF CONCERN

Chemicals of concern including TRH, BTEXN, PAHs, sVCHs, OCPs and PCBs in soil samples collected across the site were reported below the adopted site assessment criteria, with the exception of F3 and benzo(a)pyrene in the most southern portion of the site within BH30 and BH31 respectively. While all concentrations were less than health-based criteria, the concentrations of F3 and benzo(a)pyrene recorded exceed the ecological screening criteria for urban residential and public open space. However, F3 did not exceed the ecological screening criteria for commercial/industrial land use. The F3 exceedance may be attributed to previous site activities or may have been inherent in the fill imported to the site. Elevated benzo(a)pyrene recorded is most likely associated with imported fill material found in the southern portion of the site, specifically the ash, clinkers and bituminous material encountered within the fill.

Heavy metals results were all less than health-based criteria. Results that exceeded the ecological screening criteria for urban residential and commercial/industrial land use were identified within the deeper soil samples (BH43 and BH41) collected within fill material in the north-western corner of the site at depths between 2 and 3 mBGL. Additionally, metal exceedances were recorded in the southern car park of the site in subsurface soil samples collected from BH33 and BH32. Ash, cinder and clinkers were identified within fill material to the north and along the western boundary, with suspected bituminous material encountered in the southern car park. Heavy metal exceedance were associated with fill across a range of depths (0.5-3.0 mBGL). Areas to the south, north and along the western boundary appear to been impacted the most by imported fill material.

It should be noted that no human health criteria for either residential (HIL/HSLB – minimal opportunities for soil access) or commercial/industrial land use were exceeded within any of the soil samples collected across the site. This somewhat contrasts with the findings of the SGA report as discussed in Section 2.2.

It is WSP's opinion that the exceedance of the ecological criteria is unlikely to pose a significant risk to current or future site users under the proposed land use settings. It is very likely that any future development would involve removal of most if not all the fill from the site and the building and paved areas would cover the majority of the site. However, if fill is to remain beneath vegetated areas, developers may need to import appropriate growing media (e.g. topsoil) for landscaped garden beds to ensure site vegetation thrives.

Asbestos was detected in BH30 located in the southern car park and within BH38 along the western boundary of the site. The asbestos impacted soils at the site is most likely to have been imported in fill used to level the site. Of the 18 soil samples analysed only two had asbestos detects, therefore it is possible that asbestos impacts are discrete and limited to the fill material encountered within those boreholes. However, it should also be understood that asbestos assessment from bore holes is prone to underestimation of asbestos presence as the observed sample is very small. Therefore, it should be assumed that the fill across the site could contain asbestos.

In its current state beneath the paved surfaces of the site the asbestos poses no unacceptable risk. However, it could present a potential health risk to intrusive maintenance workers and future construction workers. Therefore, any future earthworks undertaken as part of site redevelopment will need to have in place a protocol for management of asbestos finds and the final excavation should be cleared of asbestos as part of site validation.

It is likely any future development would involve excavation of most if not all fill from the site and covering most of the site in concrete hardstand or building footprints, and these would provide a suitable barrier protecting future occupants in those areas. If impacted fill remained beneath gardens the risk to site occupants could be managed by providing and maintaining capping materials to the gardens. However, if asbestos remains on the site post construction this would need to be noted on a Section 149 certificate and risks to maintenance personnel managed under an Environmental Management Plan.

8.2 GROUNDWATER – CONTAMINANTS OF CONCERN

Chemicals of concern including TRH, BTEXN and VOCs in groundwater samples collected across the site were reported below the adopted site assessment criteria.

Copper, nickel and zinc concentrations were recorded above their respective guideline for the protection of freshwater ecosystems within the groundwater collected. The areas surrounding the site are renowned for historical industrial activities. Waterways and the Homebush Bay sediments have historically been contaminated by land-based industrial activities on both sides of Homebush Bay. Therefore, the magnitude of copper, nickel and zinc are likely representative of background conditions; related to industrial land-use.

8.3 COMPARISON WITH PREVIOUS INVESTIGATION FINDINGS

The SGA, 2010 study pre-dated the NEPM. Where possible results were compared with the NEPM and the following observations are provided:

- Heavy metals were detected in the fill. No results failed health-based criteria applicable to either the proposed medium density residential use or ongoing commercial/industrial use. On occasions the fill contained concentrations of copper or zinc that, if compared with current ecological criteria would fail. These results are consistent with the current investigation.
- PAHs were detected in fill, particularly in the south of the site. The two locations that failed in the previous investigation (BH09_3.1-3.2 and BH10_0.3-0.4) would also fail current health-based criteria for residential use with minimal opportunities for soil access. Only the result for BH09 would fail current health-based criteria for commercial/industrial use. Four samples would also fail ecological criteria from a range of locations in the fill.
- Hydrocarbons were measured as TPH, which is not directly comparable with the TRH fractions of the NEPM, 2013. Nevertheless, most results were low or non-detect. One location (BH9_3.1-3.2) is likely to have hydrocarbons in the F2 fraction that would exceed vapour intrusion HSLs.
- Other organic contaminants tested for, including OCPs, PCBc and VOCs were all non-detect.
- Assessment of groundwater quality was outside of the scope of the SGA, 2010 assessment.

8.4 CONCEPTUAL SITE MODEL

A key component of understanding the risks posed by contaminated sites is the development of a contaminant Conceptual Site Model (CSM). For a risk to exist there must be a source of contamination, a potential receptor (e.g. a human or ecological community) and a plausible pathway that links the two. This is known as a source-pathway-receptor analysis. If any one of those three components are absent there is no unacceptable risk.

8.4.1 SOURCE OF CONTAMINATION

Based on this assessment the following sources of contamination have been identified:

- Presence of asbestos in fill material;
- TRH within soil possibly associated with historical underground petroleum storage systems (UPSS) and/or imported fill material;
- PAHs (including benzo(a)pyrene) and heavy metals within fill material; and,
- Elevated heavy metal concentrations within groundwater underlying the site.

8.4.2 RECEPTORS

Acknowledging the context of the proposed medium density residential use, and current commercial industrial use the relevant receptors are as follows:

- On-site occupants (currently office and warehouse based employees, future medium density residential occupants)
- On-site excavation and construction workers;
- Onsite future site maintenance workers;
- Nearby ecological receptors in Powell's Creek and the Parramatta River.

8.4.3 PATHWAYS

Taking account of the possible sources the pathways by which these may affect the plausible receptors, thereby potentially completing the exposure pathway, are summarised in Table 8.1.

Table 8.1 Source pathway receptor analysis

SOURCE	PATHWAY	RECEPTOR	LIKELIHOOD OF COMPLETE LINKAGE
Identified asbestos in soil	Direct contact	Construction or maintenance workers	Negligible - Asbestos is not generally considered an unacceptable risk via dermal or ingestion pathways. The only accepted pathway for human exposure is via inhalation.
	Inhalation of fibres	Current site workers	Negligible – the site is currently almost entirely paved in concrete. Therefore, the asbestos identified is inaccessible and can't produce inhalable fibres.
		Construction or maintenance workers	Moderate – During intrusive works asbestos within the soils might be disturbed resulting in fibres being released. It is also possible that material may be stockpiled and then release fibres. The risk should be managing via appropriately prepared work plans and health and safety documentation during construction and an environmental management plan in the long term.
		Future site occupants	Low - It is likely any future development would involve the excavation of fill and covering most of the site in concrete hardstand, and this would be a suitable barrier to minimise the potential risks associated with asbestos. If impacted fill remains onsite beneath gardens it will need to be capped to prevent fibres being potentially released. An EMP for the site will be needed to ensure the cap remains in perpetuity.
Petroleum impacts in soil	Direct contact / ingestion	Construction or maintenance workers	Negligible - No concentrations of TRH or BTEXN were recorded above criteria for direct contact.
		Current or future site occupants	Negligible – The site is currently almost completely paved and any future development is likely to similarly have minimal opportunities for contact with soil.

SOURCE	PATHWAY	RECEPTOR	LIKELIHOOD OF COMPLETE LINKAGE
	Intrusion of vapours through soil profile	Intrusive construction workers and future maintenance workers	Low – No concentrations of TRH or BTEXN were recorded in the current investigation above HSLs. One sample from the SGA,2010 study is likely to have failed the F2 threshold but this threshold is derived for long term exposure whereas construction or maintenance works would be of short duration.
		Current and future site occupants	Low – No concentrations of TRH or BTEXN were recorded in the current investigation above HSLs. One sample from the SGA,2010 study is likely to have failed the F2 threshold however the affected location is beneath an open air carpark and so vapour intrusion to the current building is unlikely. Furthermore, any future development would likely involve the excavation of fill including the affected areas.
	Leaching of contaminants from soil	Groundwater and surface water bodies	Low – Though hydrocarbons were detected in groundwater from two wells drilled into shale the levels were relatively low and none of the BTEX components exceeded available criteria.
Benzo(a)pyrene and heavy metals within fill material	Direct contact / ingestion	Construction or maintenance workers	Low - No concentrations of PAHs or heavy metals were recorded above health criteria within the soil samples collected at the recent investigation. One sample from the SGA, 2010 study would fail commercial/industrial criteria. This risk can be managed through development of appropriate SWMS during excavation works.
		Future site occupants and maintenance workers	Low – PAHs from two locations in the SGA study would fail residential criteria. Heavy metals were all less than health based site criteria. The PAH impacts were both within fill material that would likely be removed during excavation works as part of construction. Furthermore, it is likely any future development would cover most of the site in pavements or buildings, and this would provide a suitable barrier to minimise the potential risks of exposure.

SOURCE	PATHWAY	RECEPTOR	LIKELIHOOD OF COMPLETE LINKAGE
Benzo(a)pyrene and heavy metals within fill material	Leaching of contaminants from soil	Groundwater and surface water bodies	Low – Considering that the natural soils are clay (low permeability), distance to the nearest surface body is 200 m and the depth to groundwater is generally >6 mBGL it is unlikely that significant contamination would leach into the groundwater or discharge to surface water bodies through baseflow contributions. Groundwater was encountered within shale, which generally acts as an aquitard. Groundwater flow in shale is usually limited to highly weathered/fracture zones within the shale. Additionally, during the 2010 investigation leachability testing was undertaken on the samples and indicated that benzo(a)pyrene and total PAH are not leachable.
Groundwater underlying the site impacted with heavy metals	Ingestion	Intrusive construction workers and future maintenance workers	Low – Standing groundwater levels were generally found to be at depths >6 mBGL with inflow zones encountered during drilling at depths >8 mBGL. Therefore, groundwater is likely isolated to the fracture zones of the shale bedrock and it is unlikely that maintenance works or intrusive works would extend that deep into the bedrock. If excavations extend to that depth, the risks associated with short duration exposure to seepage water can be managed through development of appropriate SWMS.
		Future site occupants and surrounding land users	Negligible – There are no registered groundwater abstractions within 500 m of the site. It is extremely unlikely that future site occupants would use the underlying groundwater for domestic purposes as the groundwater in the Wianamatta Shales is rarely suitable for potable supply due to its salinity, hardness and poor production rates.
	Migration of impacted groundwater to surface water receptor	Surface water bodies within 1 km radius of the site	Low – Considering the low permeability clay and the shale underlying the site as well as the distance (200 m) of the nearest surface water body (Powells Creek) and the distance (>500 m) of the Parramatta River, it is unlikely that these surface water bodies would be affected by impacted groundwater from the site through baseflow contributions. The magnitude of copper, nickel and zinc are likely representative of background conditions in the Ashfield Shale.

8.5 SUMMARY OF FINDINGS

Based on the results of both the historical and current investigation the following key summary points are noted:

Soil impacts:

- Health based impacts appear limited to the fill material and comprise occasional elevated PAH results likely associated with ash, in the southern carpark and the presence of asbestos in fill at various locations on the site including.
- In its current condition and layout, with extensive pavements across the site and minimal opportunities for accessing soil, the site is considered suitable for continued commercial land use.
- These risks are most relevant to the construction phase of future development where worker exposure can be managed through appropriate SWMS for the activities required.
- Physical removal of these contaminants would be best for reducing risk to future occupants, otherwise this risk could be managed though appropriate cap and contain strategies.
- Ecological impacts from the soil are likely to be minimal in the context of the development, which currently has minimal exposed soil and no vegetation of significance. Future development of the site would likely remove the impacted fill, but if fill remains, it should be capped with imported growing media more suited to vegetation establishment.

Groundwater impacts:

- There are no likely health impacts from the groundwater as the quality is not suitable for drinking. Any potential exposure to construction workers would be of short term duration and manageable through site hygiene practices and adoption of suitable SWMS for the works.
- Ecological impacts from the groundwater are unlikely to be significant given the distance to downgradient receptors, likely slow groundwater migration rate and the current degraded nature of the receptors. Moreover, the source of heavy metals in the groundwater may be of natural origin.

Based on the findings of this Detailed Site Investigation WSP considers, from a contamination perspective, that the site is suitable for the proposed medium density residential zoning as it can be made suitable for such use. The site will require some remedial works as part of any redevelopment but this would be best undertaken as part of bulk earthworks following demolition of site structures.

9 REMEDIAL ACTION PLAN

9.1 OBJECTIVES

The objectives of the RAP are to develop a remediation strategy for managing contaminated soil (and potentially groundwater) that will be disturbed at the site during development, and present a site that is suitable for the intended medium density residential land use. The focus of the RAP will be to provide methodologies targeting the following:

- The assessment of various remedial options, select a preferred remedial approach and detail the appropriate management measures required during development works and subsequent site validation.
- The protection of personnel working on the project, specifically during the period of the proposed construction works. The primary objective here will be to establish the health and safety requirements and protection procedures to minimise the potential for exposure of site personnel to contamination;
- The protection of sensitive receptors during the period of the proposed construction works as well as on an ongoing basis after project completion. The objectives here are to minimise any health risks to the public or the local environment through the migration of contaminants off-site as well as provide a hierarchy of control for the long-term management of excavated soils.

The health and safety requirements presented are based on information available at the time of writing and are subject to revision if other unexpected contaminants are discovered during the project.

9.2 TECHNICAL GUIDANCE

The RAP was prepared with reference to the following legislation and guidelines:

Acts:

- *Contaminated Land Management Act* (1997).
- *Protection of Environment Operations Act 1997.*
- *Work Health and Safety Act 2011*

Regulations:

- *Work Health and Safety Regulation 2017*.

Guidelines:

- *Contaminated Sites: Guidelines for consultants reporting on contaminated sites* (NSW, EPA, 2011).
- *Contaminated Land Management: Guidelines for the NSW Site Auditors Scheme – 3rd edition* (NSW EPA, 2017).
- *Contaminated Sites: Guidelines on the duty to report contamination under the Contaminated Land Management Act 1997* (NSW EPA, 2009).
- *Managing Land Contamination Planning Guidelines: State Environmental Planning Policy No. 55 – Remediation of Land* (NSW DUAP, 1998).
- *National Environment Protection (Assessment of Site Contamination) Amendment Measure 1999,* as amended 2013 *(NEPC, 2013).*
- *Waste Classification Guidelines – Part 1: Classifying waste* (NSW EPA, 2014).

10 REMEDIATION OPTIONS ASSESSMENT

10.1 OVERVIEW

This section of the RAP provides the results of a feasibility study into alternative remediation technologies for the work stipulated under this RAP. A screening level assessment is then undertaken to identify those remediation technologies that are not applicable to the site and those technologies that are technically feasible and require further assessment.

10.2 REMEDIAL OPTIONS ASSESSMENT

Any contaminated soil will need to be managed or remediated as part of future site development. Possible management and remediation options were considered against the NSW EPA waste management hierarchy (*Waste Avoidance and Resource Recovery Act 2001*) and in accordance with the remediation objectives. An evaluation of feasible remediation options are outlined below and summarised in Table 10.1. It is noted that soils form the redevelopment excavation will required excavation and disposal to facilitate redevelopment regardless of their contamination status.

10.2.1 DO NOTHING

No remedial action is taken using this approach. The advantages of this option are that no remedial costs are incurred. Based on the findings of the DSI the site is suitable to continue under its current use which would fall into this category.

This option is, however, unlikely to be practical in the scheme of any future residential redevelopment as the development potential would likely only be realised by excavation of the fill to allow for undercover carparking. Therefore, remediation will need to be integrated with future construction works. Under a redevelopment scenario, contaminated soil would need to be addressed by removal or onsite management. Without some form of remediation and validation, the site would not be considered suitable for the proposed use.

10.2.2 EXCAVATION AND OFF-SITE DISPOSAL

This process would involve the excavation, removal and off-site disposal of impacted material across the site. Waste classification sampling and analysis would need to be carried out to ensure the impacted soil is disposed of to appropriately licenced facilities. Resulting excavations would need to be validated through visual and chemical analysis to demonstrate that the site is suitable for the intended use.

This option is a conservative, highly successful and proven method for removal of material impacted with asbestos, hydrocarbons and heavy metals. The advantage of this remediation option is that any contaminants disturbed are removed and no longer require management on the site. The method is also one that likely integrates well with the planned development, as bulk excavation would be required in any case.

The main disadvantages of the method are the prohibitive cost associated with landfill disposal, the larger carbon footprint of the works associated with haulage and the fact the method simply transfers management of the contamination to others.

10.2.3 CAPPING AND CONTAINMENT

This approach reduces potential exposure to impacted material through containing the contamination beneath a purpose-built cap. The cap may include an impermeable barrier, such as concrete, placed on the existing site surface, or the placement of a specified thickness of clean soil over impacted areas.

It would be potentially possible to construct a specific cell on the site for disposal of impacted soil into as part of the development, however this would require additional earthworks. The advantage of this option is that offsite disposal of soils can be avoided providing cost savings. Disadvantages include the need to design the repository into the scheme of future development designs and the additional complexity and time associated with earthworks. In addition, the presence of the contaminated soils present an ongoing liability on the site and an environmental management plan (EMP) would need to be developed and implemented for the foreseeable future. A notation on the Section 149 planning certificate for the land may also be required to identify that the property is subject to the EMP. As the development of a medium density residential building would involve the excavation of fill for construction of basement parking this cap and containment strategy, though feasible, is unlikely to be preferred.

Table 10.1 Remediation option & feasibility summary

OPTION	BENEFITS	LIMITATIONS	TIME/LABOUR EFFECTIVENESS	COST	APPLICABILITY
Do nothing	Nil cost	Does not render the site suitable for the proposed future land use.	Potential liability. Does not meet Council requirements.	Excellent - no time required.	Applicable to ongoing current use but not appropriate for site redevelopment
Excavation and off-site disposal	Removes contamination – no ongoing liability and unrestricted land use. Excavations already proposed as part of site redevelopment.	Waste disposal costs. Civil works required.	Acceptable approach. Meets EPA requirements for remediation and satisfies project objectives. Will facilitate site Auditor sign-off. Excavation likely required in any case.	Medium to high. Cost would be required in any case if excavation required for development.	Applicable and preferred.
Capping and containment	Eliminates requirement for offsite disposal.	Ongoing liability and EMP required. Notification on title or Section 149 certificate. Not possible in areas where excavations proposed as part of the site development design.	Acceptable approach. May add time for design and implementation of more complex earthworks.	Low to medium. cost would depend on level of reworking required to meet design.	Applicable but not preferred. Would be appropriate contingency.

10.3 PREFERRED REMEDIATION STRATEGY

On the basis of the soil remediation options evaluated, the preferred remediation strategy is the excavation and off-site disposal of impacted soil. Where excavations lie outside the proposed redevelopment excavation footprint and design levels require, reinstatement of site levels will be achieved using imported virgin excavated natural material (VENM) or excavated natural material (ENM).

10.4 EXTENT OF REMEDIATION

Essentially the site has a layer of fill across it ranging from approximately 1.5 m thick on the eastern boundary to in excess of 4 m on the western boundary. that on occasions contains contaminants. Due to the inherent variability of the fill it is difficult to specify with certainty zones that required particular remedial works. From the available information, the types of materials that will need to be managed include:

- Asbestos impacted fill;
- PAH and TPH impacted fill; and
- General fill that needs to be disposed of to achieve design levels.

Asbestos impacts have been found in 2 boreholes to date, one in the centre of the site and one in the south-western corner. The depths of impact range from 0.5 m to 1.0 m. There is no clear correlation in materials that are affected by asbestos, other than that they are fill materials. Given limitations of the sampling method, asbestos may be more extensive in fill than these results indicated. Asbestos impacted soil would need to be disposed of as Special Waste – Asbestos Waste.

PAH impacted soil appears most prevalent in the south of the site and the impact appears to be related to ash and ash associated with petroleum hydrocarbons. The PAH impacted soil may be able to be disposed of under a general approval of immobilisation for ash impacted soil – subject to additional waste classification assessment.

Remaining general fill that is needed to be disposed of from the site will also need to be classified for waste disposal purposes. Based on results to date it is likely to fall into a General Solid Waste classification.

Given the uncertainty in the volumes of each of these classes of materials it is recommended that post demolition, *insitu* waste classification be carried out by test pitting on an intensive grid with sufficient samples collected to inform statistical waste classification. We recommend bulk samples be collected for each vertical metre of fill so that an earthworks plan can be developed.

Once the waste classification across the site, in metre thick layers, has been established the different classes of waste can be excavated and disposed of directly. It would be recommended that the asbestos impacted zones be addressed separately to other bulk earthworks as asbestos removal controls will need to be in place for those works.

An alternative approach would be to prepare manageable stockpiles of material and then have these sampled, at an appropriate density, for waste classification purposes, however this approach is unlikely to be preferred as it would require double handling of the materials and a hiatus while results are being obtained.

11 SCOPE OF REMEDIATION

The following scope of remediation is relatedly high level as the planned development is not yet finalised. It is anticipated that the scope will be refined in consultation with the remediation contractor into a remediation works specification or earthworks plan prior to commencement.

11.1 PRELIMINARIES

In accordance with State Environment Planning Policy No. 55 - Remediation of Land (SEPP55), written notification of the proposed remediation works is required to be submitted to Council prior to the commencement of site works. Copies of the investigation reports and RAP shall also be provided to Council. Council shall be provided with contact details for the remediation contractor at least 14 days prior to the commencement of the proposed remediation works. Council shall be given written notice, at least 48 hours prior to the commencement of excavation, shoring or underpinning works on the subject site.

The remedial contractor will develop and implement a safety management plan (SMP) that addresses environmental, occupational health and safety hazards and risks during the remediation. Service plans will be requested from the Dial Before You Dig service and from Council as necessary to identify the location of underground services at the site.

11.2 WASTE CLASSIFICATION

The remediation strategy is for removal of the fill from the site. Prior to any disposal the materials will require waste classification. As discussed in Section 10.4 it is envisaged that a grid based *insitu* waste classification will be conducted once demolition is complete.

NSW EPA, 2014 requires all waste generated at the site are to be visually and chemically assessed to appropriately classify the material for off-site disposal. Classifying waste is a six step process as outlined in Table 11.1.

Table 11.1 Waste classification process

STEP	DISCRIPTION
Step 1	Establish if the waste should be classified as special waste (i.e. asbestos, clinical and tyre waste). If the waste is special waste due to its contamination with asbestos (i.e. classified as asbestos waste), continue to classify the waste in accordance with the steps below.
Step 2	If not special waste (other than asbestos waste), establish whether the waste should be classified as liquid waste.
Step 3	If not special waste (other than asbestos waste) or liquid waste, establish whether the waste is of a type that has been 'pre-classified'. To simplify the classification process, the Environment Protection Authority (EPA) has pre-classified a number of commonly generated wastes as either hazardous, restricted solid or general solid waste (putrescible) or general solid waste (non-putrescible).
Step 4	If the waste is not special waste (other than asbestos waste), liquid waste or pre-classified, establish if it has certain hazardous characteristics and can therefore be classified as hazardous waste.
Step 5	If the waste does not possess hazardous characteristics, it needs to be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste (putrescible and non-putrescible).
Step 6	If the waste is chemically assessed as general solid waste, a further assessment is available to determine whether the waste is putrescible or non-putrescible. The assessment determines whether the waste is capable of significant biological transformation.

Steps 1 and 5 are the most important in the classification of contaminated soils.

In order to assess for asbestos both visual observations and chemical analysis will be used. Chemical results will be compared with waste classification criteria presented in NSW EPA 2014. Relevant criteria are reproduced in Table 11.2.

Table 11.2 Waste classification criteria

	GENERALSOLID WASTE			RESTRICTED SOLID WASTE		
	No TCLP	With TCLP Test		No TCLP	With TCLP Test	
	CT1 (mg/kg)	TCLP1 (mg/L)	SCC1 (mg/kg)	CT2 (mg/kg)	TCLP2 (mg/L)	SCC2 (mg/kg)
TPH & BTEX						
TPH C_6 – C_9 fraction	650	-	-	2,600	-	-
TPH C_{10} – C_{36} fraction	10,000	-	-	40,000	-	-
Benzene	10	0.5	18	40	2	72
Toluene	288	14.4	518	1,152	57.6	2,073
Ethylbenzene	600	30	1,080	2,400	120	4,320
Xylene (total)	1,000	50	1,800	4,000	200	7,200
PAHs						
Benzo(a)pyrene	0.8	0.04	10	3.2	0.16	23
Total PAHs	200	-	-	800	-	-
Heavy metals						
Arsenic	100	5	500	400	20	2,000
Cadmium	20	1	100	80	4	400
Chromium (VI)	100	5	1,900	400	20	7,600
Lead	100	5	1,500	400	20	6,000
Mercury	4	0.2	50	16	0.8	200
Nickel	40	2	1,050	160	8	4,200
PCBs & OCPs						
Total PCBs	<50	-	-	<50	-	-
Scheduled chemicals (incl. OCPs)	<50	-	-	<50	-	-

Note: If no leach testing by the TCLP method is undertaken then results need to be compared to the CT1 or CT2 thresholds. Where TCLP is conducted then the leach results are compared with the TCLP1 or TCLP2 thresholds and the total concentrations against the SCC1 or SCC2 criteria.

11.3 ACID SULFATE SOIL MANAGEMENT

The results to date have indicated that acid sulfate soils are unlikely to be beneath the majority of the site. All but one soil bore showed natural soil consistent with residual clays formed from weathering of underlying shale. The one bore hole with possible indications of potential acid sulfate soil (PASS) was BH37 which terminated in a soft black silt.

It is possible that the site contains some prior streams that could contain estuarine deposits. If present these could be PASS. It is recommended that during the *insitu* waste classification process an assessment of the natural soil also take

place and if such soils are encountered beneath the fill they should be tested for acid generating potential by the chromium reducible sulfur method.

If PASS is found then it should be mapped and its excavation, treatment and waste disposal conducted under an Acid Sulfate Soil Management Plan (ASSMP). An ASSMP only needs to be developed in the event that PASS is verified during the waste classification works.

11.4 APPROVALS AND LICENCES

All works will be undertaken in accordance with the following regulations and guidelines:

- Work Health & Safety Act 2011 & Regulations (2017).
- SafeWork NSW Requirements, Guidelines and Codes of Practice.
- The Protection of the Environment Operations Act 1997.
- The Protection of the Environment Operations (Waste) Regulation 2005.
- NSW EPA Waste Classification Guidelines.
- If required, an EPL issued under the Protection of the Environment Operations Act 1997 (POEO Act)

Notification to WorkCover NSW must be made 5 days prior to commencing any works involving asbestos. For all asbestos removal works, a licensed asbestos removal contractor must be engaged.

Transporters of contaminated waste are required to be licensed and follow NSW EPA waste tracking requirements and receiving facilities are required to be licensed for the category of waste they are scheduled to receive. Waste classification documentation and waste dockets from the receiving facility will be kept on file for site validation purposes.

11.5 SAFETY AND ENVIRONMENTAL CONTROLS

Prior to remedial works, safety and environmental controls shall be established in accordance with Regulatory requirements. Section 15 provide minimum requirements for environment and safety requirements but should not be seen as being exhaustive. The remediation contractor is responsible for ensuring their work is carried out in a legal and safe manner and that at all times the environment is appropriately protected. Contractors are to prepare site specific safety and environmental management plans prior to commencing works.

Where asbestos materials are suspected, a Class A (friable) or Class B (non friable) asbestos removal licensed contractor will be required to coordinate the works and specify appropriate environmental control measures in accordance with existing legislation and guidance.

11.6 MARKING OF REMEDIATION AREAS

The lateral extent of the soils requiring removal under various classifications (following *insitu* waste classification works as noted in Section 10) shall be marked out with spray paint or pegged out.

11.7 EXCAVATION OF IMPACTED SOILS

Excavation of impacted soils shall be completed using an appropriately sized excavator. Impacted soil shall be excavated in each remediation area to the depth of natural soils as indicated in Section 10.

Asbestos impacted borehole location (BH30 and BH38, and any other zones identified during *insitu* waste classification works) are to be excavated and validated prior to other bulk earthworks commencing in these areas. The depth of material to be removed will be based on the depth of fill material and the horizontal extent will be at least 5 m diameter circles around the asbestos locations followed by visual clearance by a licenced asbestos assessor (LAA).

Once the asbestos impacts have been removed the remaining grids can be disposed of in accordance with their respective waste classifications. However, it will be necessary for a spotter to be employed in case additional asbestos impacted material is uncovered.

Once the proposed extent of soil removal has been achieved, WSP will complete field screening (visual, olfactory and PID) to assess the potential for contamination to remain within the excavations. Where required, WSP may direct additional contaminant chase-out, noting potential safety, geotechnical and time constraints associated with additional excavation works.

For remedial areas outside the proposed building footprint, final excavation volumes shall be surveyed to assist with documentation of remediation extents.

To minimise the potential for re-contaminating excavated areas, excavation works shall be staged and, where feasible, excavation shall commence at the end of the marked excavation zone which is furthest from the stockpiling or loadout area, with the work site retreating toward this area as works progress.

11.8 MATERIAL STOCKPILING

It is anticipated that stockpiling of soil will be kept to a minimum, and generally be associated with assisting loadout of excavations. If stockpiles are generated in association with other ancillary works onsite they will require separate classification prior to disposal.

Where feasible the stockpiling will be adjacent to excavations to minimise tracking of material across the site.

Stockpiles shall:

- Not be placed on footpaths or nature strips.
- Be placed away from drainage lines, gutters and stormwater pits/inlets.
- Be covered and secured.
- Be placed on a level area as a low, elongated mound.

If any stockpiles contain asbestos materials they will be kept moist, covered in plastic and placard to clearly show they contain asbestos.

It is recommended that the remediation contractor maintain a stockpile and materials tracking register throughout the works.

11.9 OFF-SITE REMOVAL OF CONTAMINATED SOIL

Material shall be transported and disposed off-site in accordance with the NSW EPA 2014 Was*te Classification Guidelines – Part 1: Classifying Waste*. All material being removed off-site will be disposed of to an appropriately licensed facility. Records of truck/load movements, tipping dockets and landfill licences will be provided in the Validation Report. Records of any materials requiring NSW EPA waste tracking will also be provided to the validation consultant for inclusion in the Validation Report.

11.10 SITE VALIDATION

Validation sampling and analyses of excavations shall be conducted in accordance with the Validation Plan (Section 12). If validation objectives are not achieved, additional excavation and disposal works may be required in accordance with Sections 11.6 to 11.9 inclusive.

Validation evidence will be documented in a Validation Report prepared with reference to the NSW EPA, 2011, *Contamination Sites Guidelines for Consultants Reporting on Contaminated Sites* and SEPP55 requirements.

In accordance with the provisions of SEPP55, Council shall be notified of validation within one month of completion of remediation work.

11.11 SITE REINSTATEMENT

It is anticipated that as excavations will be ancillary to the bulk excavations required for the development that no reinstatement will be necessary.

The excavations are to be left in a safe condition. If excavations are to be backfilled (after successful soil validation) the backfill used should either be site won validated natural clays (VENM) or otherwise appropriately classified ENM imported to the site. The backfill material shall be compatible with geotechnical purposes.

11.12 SITE DEMOBILISATION

Remediation works are likely to be conducted in conjunction with site redevelopment works.

Generally, plant/equipment and safety/environmental controls will therefore be left in place until all works are completed or areas are deemed suitable/safe.

The exception is plant used in the removal of asbestos impacted soils. This plant will require decontamination in accordance with an asbestos removal control plan prior to moving from the affected area.

11.13 REMEDIATION SCHEDULE

The remediation program will be undertaken in conjunction with site redevelopment works. Sampling and analysis will be conducted as efficiently as possible to minimise delays.

12 VALIDATION PLAN

This section outlines the requirements for documenting the success of the remediation works.

12.1 VALIDATION METHODOLOGY

It is expected that the remedial works will be conducted as part of the bulk earthworks for the site. The validation will ultimately be carried out once the excavation works are complete and will include visual assessment and sample testing of the walls and floor of the excavation (to the extent practicable).

Wall sampling may not be possible depending on the piling works around the perimeter, and the floor may not be practicable to obtain if the excavation extends to bedrock. In such instances the site will be validated by visual and photographic evidence that excavation has progressed to the extent practicable and that no exposed fill remains accessible to the future site users.

It is anticipated that the following validation approach will be implemented:

- Excavation floors will be validated by visual means if fill extends to natural soil or bedrock. If site observations indicate staining, odours or elevated PID results at the excavation base then supplementary sampling and analysis will occur; otherwise,
- Where excavations cease in fill material sampling will be conducted at a density of one sample per 400 m^2, i.e. a 20 m grid (equivalent to 20 samples across the site base, which meets the minimum sampling density for a site of this area).
- Walls of the excavation (if accessible) will be validated by soil sampling and analysis at a rate of one sample per 20 linear metres. Samples will be collected at each vertical metre to the depth of natural soil.
- Imported VENM material that may be required for backfilling purposes will require validation sampling to confirm the VENM status of the material prior to backfilling as discussed in Section 12.4.

Sample collection methods will be recorded and reported, with rationale for sample selection. Based on the validation sampling results for each remediation area, one of the following actions will be made:

- If some of the validation samples fail to meet the remediation criteria, the soils identified as failing the remediation criteria will be further excavated (to the extent practicable). Further validation of these areas will be required.
- If some of the validation samples fail the remediation criteria and further excavation is not considered practicable, alternate remedial strategies and/or risk assessment to assess the significance of the remaining contamination may be considered in consultation with the Site Auditor.
- If all validation samples meet the remediation criteria, no further remedial works will be required.

The validation sampling protocol is presented in Section 12.2.

12.2 VALIDATION SAMPLING AND ANALYSIS

Where validation samples are collected, they will be analysed for the contaminants of concern (TRH, PAHs, asbestos and heavy metals) and compared with the adopted validation criteria.

Soil samples will be collected from the excavator bucket or directly from the excavation surface by using a decontaminated stainless steel trowel or by hand with nitrile gloves. Where samples are collected from the excavator bucket, the sample will be obtained from the centre of the bucket to minimise the potential for cross-contamination and to ensure a representative sample is obtained.

If a hand trowel is used for collecting soil validation samples, the equipment shall be rinsed with de-ionised water and phosphate free detergent (Decon 90) between sampling locations. In order to maintain sample integrity, new nitrile gloves will be used to collect each sample.

All sample containers will be clearly labelled with a sample number, sample location, sample depth, sample date and samplers initials. The sample containers will then be transferred into a Esky for shipment to the testing laboratory for analysis. A chain-of-custody (COC) form will be completed, and forwarded with the samples to the testing laboratory. Sample analysis is to be conducted NATA accredited laboratory in accordance with NATA approved methods.

Table 12.1 Sampling design

SAMPLING DESIGN	SAMPLING PATTERN	SAMPLING DENSITY	ANALYTICAL SUITE
Soil validation – walls of excavations.	Systematic	Minimum of 1 per 20 m wall. Vertically sample every metre.	TRH, PAHs, asbestos and heavy metals.
Soil validation - base of in natural soils	Systematic	Visual assessment on a systematic grid base if excavation extents to natural soils or bedrock.	No sampling required unless visual observations note odour, staining or PID readings are elevated.
Soil validation - base of in fill	Systematic	Minimum of 1 per 400 m^2 (20 metre grid)	TRH, PAHs, asbestos and heavy metals.
Validation of any VENM material prior to importation to site (as required).	Random	Minimum 3 samples per source site. If more than 1,000 m^3 form a site then additional sample per 1000 m^3	Metals, TPH, OCP, OPP, PAH, asbestos and source history review to demonstrate material is VENM.

12.3 VALIDATION CRITERIA

Assessment criteria have been selected following consideration of the proposed land use following redevelopment. It is noted that redevelopment will primarily consist residential use. In addition, it is likely that quantities of fill material will require off-site disposal during the construction process. Based on the above, the validation results will be assessed against the following criteria:

- NEPM (2013)- *Schedule B-1 Investigation Levels for Soil and Groundwater* - Table 1A(1) Health investigation levels for soil contaminants; HIL B for residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- NEPM (2013) - *Schedule B-1 Investigation Levels for Soil and Groundwater* - Table 1A(3) Health investigation levels for vapour intrusion; HIL A&B for low-high density residential.
- NEPM (2013)- *Schedule B-1 Investigation Levels for Soil and Groundwater* - Table 1B(1), (2) & (3) Soil specific added contamination limits for aged chromium (III), copper, nickel and zinc (EILs).
- NEPM (2013)- *Schedule B-1 Investigation Levels for Soil and Groundwater* - Table 1B (4) Generic added contamination limits for lead in soil (EILs).
- NEPM (2013)- *Schedule B-1 Investigation Levels for Soil and Groundwater* - Table 1B (5) Generic EILs for aged arsenic, fresh DDT and fresh naphthalene in soils.

- NEPM (2013) - *Schedule B-1 Health Screening Levels for Asbestos Contamination in Soil* - Table 7 Health screening level; Residential B.

Section 4 describes the selection of applicable site criteria in detail and provides summary tables of the relevant thresholds.

12.4 IMPORTED FILL

Where required, excavations shall be backfilled (after successful soil validation) using validated VENM or ENM imported to the site. The source site should be inspected to confirm suitability of the material.

If the imported fill requires testing to validate it as VENM, samples will require analysis for heavy metals, TPH, BTEX, PAH, OCP, PCB and asbestos. VENM shall be considered suitable for reuse on site where:

- Heavy metals (M8) concentrations are less than representative background concentrations expected for the material.
- TPH, BTEX, PAH, OCP, PCB concentrations are less than the laboratory limit of reporting.
- Asbestos is not detected at the laboratory limit of reporting.

A minimum of three samples of imported fill will be analysed (per source site). If more than 1,000 m^3 is imported to the site, one additional sample shall be obtained per 1,000 m^3.

If ENM is to be used to backfill the excavations, the material will be tested in accordance with the NSW EPA *The excavated natural material order 2014* and imported in accordance with the NSW EPA *The excavated natural material exemption 2014.*

12.5 VALIDATION REPORTING

Following the remediation and validation works a final report will be prepared in accordance with the NSW EPA, 2011 *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. The validation report will detail the extent and nature of the remedial works undertaken, characterisation and disposal of contaminated soils, the validation of imported clean fill and topsoil (if any) and will consider the overall status of the site.

It should be noted that to enable the validation report to be produced, the remediation contractor will be required to supply:

- the quantities and types of waste disposed of;
- details of the receiving facility/facilities accepting waste from the site;
- disposal dockets for the waste disposed, documenting the weight of each load disposed of to landfill;
- details of any imported materials (including VENM certification, laboratory results, origin and supplier, exemption details, quantities and areas of placement);
- photographic chronology of the works;
- material/stockpile handling records; and,
- survey data (including surveys of excavations and following backfilling works).

This information will be supplemented by the validation results and site visit records and photographs collated by the environmental consultant during the works.

13 VALIDATION QUALITY ASSURANCE AND QUALITY CONTROL

13.1 DATA QUALITY OBJECTIVES

The data quality objectives (DQO) process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection designs. The data quality objectives define the experimental process required to test a hypothesis. The DQO process was developed to ensure that efforts relating to data collection are cost effective, by eliminating unnecessary, duplicative or overly precise data whilst at the same time, ensuring the data collected is of sufficient quality and quantity to support defensible decision making.

It is recognised that the most efficient way to accomplish these goals is to establish criteria for defensible decision making before the data collection begins, and then develop a data collection design based on these criteria. By using the DQO process to plan the validation works, the relevant parties can improve the effectiveness, efficiency and defensibility of a decision in a resource and cost effective manner.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The DQO process adopted for the assessment and validation works is outlined in Table 13.1.

Table 13.1 DQO process

STEP	DISCRIPTION	OUTCOMES
1	State the problem	The problem under consideration is that the fill material in certain areas of the site does not meet the NEPM health-based criteria for the proposed medium density residential development (or ecological criteria for this land use). The development of the site will include bulk earthworks. Thus, remediation of the impacted soil can be ancillary to the proposed development works.
2	Identify the decisions/ goal of the investigation	The principle decision is 'what is the most appropriate way to minimise ongoing liability and risk associated with the localised fill material and to render the site suitable for future redevelopment'. Requirements of the adopted remediation and validation works must include: — No unacceptable on or off-site impacts during and after remedial works; — Provisions to verify that the remedial actions are adequate and will not result in on or off-site impacts (i.e. validation); and — Provisions to verify that the site is suitable for the proposed development.
3	Identify the inputs to the decision	The inputs required to make the above decisions are as follows: — Assessment data gathered for the site to date; — Site assessment criteria for soils applicable to the proposed redevelopment. — Materials tracking documentation, including stockpiling, vehicle movements and waste disposal documentation. — Waste classification reports. — Validation data obtained during the remediation works program, including validated excavations, confirmatory validation of fill materials which will remain at the site and validation of imported backfill materials.

4	Define the study boundaries/ constraints on data	The site boundary is shown in Figure 1 and 2, Appendix A. The horizontal extent of the RAP is limited to the boundaries of the site. The vertical extent of the required remedial/management works is limited to impacted fill material which ranges in thickness to a maximum of 3.2 m. Validation will occur once final excavation depths have been achieved.
5	Develop a decision rule	The remediation is intended to demonstrate to the extent practicable that contaminated material has been removed from the site, and that the site is suitable for the intended medium density residential development. Based on the available site assessment information elements of the decision rule can be established as follows: — Have the identified impacts been removed from the site? — Have fill materials which will remain at the site been adequately validated? — If potential contamination remains at the site, will ongoing issues be managed via an EMP? — Have remedial works adequately reduced the overall risk of the site? — Is the site rendered suitable for the proposed use? — Have aesthetic issues been addressed where appropriate? — Has validation been reported in accordance with NSW EPA, 2011? It is intended that site soils be validated to the adopted Validation Criteria to ensure that: — The remedial works adequately reduce the overall risk of the site; and — The site be rendered suitable for the proposed use and to obtain Auditor sign off.
6	Specify limits on decision errors	The acceptable limits on decision errors to be applied in the validation sampling components of the works been developed based on the data quality indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness and are presented in Table 13.2 and Table 13.3.
7	Optimise the design for obtaining data	The purpose of this step is to identify a resource-effective data collection design for generating data that satisfies the DQO's. This assessment has been designed considering the information and data obtained during previous contamination assessments. To ensure the design satisfies the DQOs, data quality indicators (DQIs) (for accuracy, comparability, completeness, precision and reproducibility) have been established to set acceptance limits on field methodologies and laboratory data collected. These are summarised in Table 13.2 and Table 13.3.

13.2 SUMMARY OF DATA QUALITY INDICATORS (DQIS)

DQIs for sampling techniques and laboratory analyses of collected soil samples define the acceptable level of error required for validation carried out as part of this remediation program. The adopted field methodologies and data obtained are characterised into the following DQIs categories:

- precision: a quantitative measure of the variability (or reproducibility) of data;
- accuracy: a quantitative measure of the closeness of reported data to the true value;
- representativeness: the confidence (expressed qualitatively) that data are representative of site conditions;
- comparability: a qualitative parameter expressing the confidence with which one data set can be compared with another; and,
- completeness: a measure of the amount of useable data (expressed as %) from a data collection activity.

A summary of the field and laboratory DQIs for the validation assessment are provided in Table 13.2 and Table 13.3.

Table 13.2 DQI for field techniques

DQI	TECHNIQUE
Precision	WSP standard operating procedures (SOPs) will be complied with.
	Collection of intra-laboratory duplicates (1:20 primary samples).
Accuracy	WSP SOPs appropriate and complied with.
	Collection and analysis of inter-laboratory duplicates (1:20 primary samples).
	Collection of rinsate blanks, trip blanks and spikes (one per batch of samples).
Representation	Appropriate media sampled.
Comparability	Same SOPs used on each occasion.
	Experienced sampler.
	Climatic conditions (temperature, rainfall, wind).
	Same type of samples collected, consistent preservation methods.
Completeness	SOPs appropriate and complied with.
	All required samples collected.

Table 13.3 DQIs for laboratories

DQI	DESCRIPTION	ACCEPTABLE LIMIT
Precision	Relative percentage difference (RPD) for intra-lab duplicates and internal duplicates (lead, TRH and PAHs in sediment or soil)	<5 × LOR : <100% RPD[1] 5-10 × LOR : <75% RPD >5 × LOR: <50% RPD
	Analysis of laboratory prepared trip spikes (one per sample batch for volatiles)	70-130%
	National Association of Testing Authorities (NATA) certified laboratories	NATA accreditation for analyses performed
Accuracy	Analysis of laboratory prepared trip blanks (one per sample batch)	Non-detect for contaminants analysed
	Analysis of rinsate blanks (one per day) when non-dedicated sampling equipment is being used	Non-detect for contaminants analysed
	Analysis of laboratory blanks	Non-detect for contaminants analysed

DQI	DESCRIPTION	ACCEPTABLE LIMIT
	Analysis of laboratory matrix spikes, laboratory control samples and surrogate recoveries	70-30% inorganics/metals 60-140% organics 10-40% semi-volatile organic compounds
	Relative percentage difference (RPD) for inter-lab duplicates and internal duplicates (lead, TRH and PAHs in sediment or soil)	<5 × LOR : <100% RPD[1] 5-10 × LOR : <75% RPD >5 × LOR: <50% RPD
Representativeness	All required samples analysed	-
Comparability	Sample analytical methods used	As per NEPM (NEPC, 2013)
	Same units (justify/quantify if different)	-
	Same laboratories (justify/quantify if different)	-
	Sample Practical quantification limits (PQL)s (justify/quantify if different)	Less than nominated criteria
Completeness	All critical samples analysed	As per sampling plan
	All required analytes analysed	As per sampling plan
	Appropriate methods and PQLs	As per NEPM (NEPC, 2013)
	Sample documentation complete	As per NEPM (NEPC, 2013)
	Sample holding times complied with	As per NEPM (NEPC, 2013)

Note:

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

13.3 LABORATORY TESTING

The chemical testing laboratories engaged to perform the laboratory testing will be NATA registered for the analysis undertaken. The laboratory will be instructed to perform and report results of internal quality control tests, which will consist of performing reagent blanks and surrogate spike analysis for organics and standard reference matrix for inorganic analysis.

The laboratory quality control data will be checked as follows:

- Checking that the reporting limits and procedures are satisfactory.
- Checking that the samples are analysed within holding times.
- Checking that laboratory blanks / reagent blanks are less than the laboratory reporting limits.
- Checking the reproducibility of samples by calculating the Relative Percentage Differences (RPDs) between primary and duplicate laboratory samples using a control limit of 50%.
- Checking that laboratory spikes, surrogate spikes, matrix spikes and duplicate matrix spike recoveries are within acceptable control limits.

The predetermined Data Quality Indicators (DQIs) established for the project in relation to precision, accuracy, representativeness, comparability and completeness are presented in Table 13.3.

14 REMEDIAL CONTINGENCIES

At this stage, it is anticipated that the proposed remedial option should be effective in dealing with the identified contamination, however contingency strategies may be required in the event of certain scenarios. Anticipated potential contingencies are detailed in Table 14.1.

Table 14.1 Remediation Contingencies

POTENTIAL ISSUES	PROPOSED CORRECTIVE ACTIONS	RESPONSIBLE PERSON	COMMUNICATION AND ADDITIONAL SAMPLING/MONITORING
Unexpected contamination findings	Stop work immediately and consult with the validation consultant in regards to appropriate management options.	Remediation contractor	Unexpected finds are to be recorded in the daily site log and provided to Eloura Holdings, and the environmental consultant within 24 hours. Sampling and laboratory testing of potentially contaminated material to determine appropriate management options based on visual, olfactory findings and an assessment of analytical results.
Odours	Biosolve surfactant sprays or sprinklers to reduce odours. Covering odours material as practical. Smoothing the surface of any stockpiled material to minimise escape of fugitive odours. Establishment of a documented complaints/actions procedure.	Remediation contractor	Odours should be recorded in the daily site log and Eloura Holdings, and the environmental consultant within 24 hours.
Impact to off-site receptors arising from work.	Should erosion or sediment controls be breached or should any other release occur that may impact upon off-site sensitive receptors, works is to stop immediately and the cause of the breach or release investigated. Only once site controls have been remedied or release has been adequately contained should site works commence.	Remediation contractor	The findings are to be recorded in the daily site log and provided to Eloura Holdings, and the environmental consultant within 24 hours.
Heavy rain	Ensure sediment and surface water controls are operating correctly. Cover and bund all stockpiles with plastic or other suitable impermeable sheeting. Consider requirement for water holding tanks on site and relevant pumping equipment.	Remediation contractor	None.

POTENTIAL ISSUES	PROPOSED CORRECTIVE ACTIONS	RESPONSIBLE PERSON	COMMUNICATION AND ADDITIONAL SAMPLING/MONITORING
Seepage Water	Where surface water run off or perched groundwater is encountered in areas of impacted soils, a strategy will be established to ensure that off-site (i.e. laterally) or vertical migration (i.e. to the underlying groundwater table at approximately 4 and 6 mBGL) of contaminated waters does not occur.	Remediation contractor	Should excavations require dewatering, water samples will be collected by experienced personnel and analysed for TRH, PAHS and heavy metals and any other analytes required to be tested for by Council or liquid waste contractor. No releases to stormwater without all analytes required to be tested by Council being met. If disposed of by liquate waste contractor disposal dockets will be provided in the validation report.
Equipment failures	Maintain spare equipment or parts close to site; keep rental options available, shut down affected operations until repairs are made. Develop and implement routine operation and maintenance checks on equipment, service checks etc. Clean up any equipment or plant spills (i.e. hydraulic or fuel releases) with absorbent material. Stockpile the impacted material in a secure location.	Remediation contractor	Breaches are to be recorded in the daily site log Sample any impacted materials that have resulted from equipment failures (TRHs, BTEX compounds and PAHs) and determine appropriate disposal/treatment option based on an assessment of analytical results.
Complaints are received relating to the works undertaken	Stop works and implement control measures to address complaint (if possible). Advise and consult with Eloura Holdings.	Remediation Contractor	Notify relevant Project Managers following complaint. Report complaint as per agreed management procedures.

15 SITE SAFETY AND ENVIRONMENT PLAN

15.1 OCCUPATIONAL HEALTH AND SAFETY

The remediation contractor will ensure that a project specific occupational health and safety plan has been prepared. This RAP does not relieve the remediation contractor of their responsibility for the health and safety of their employees, sub-contractors and visitors to the site, nor their responsibility for preventing contamination of areas outside remediation work areas.

Specific safe work method details for the remediation of contamination on the site will be the responsibility of the remediation contractor and will depend upon the equipment used and the overall sequence of remediation.

The environmental consultant will prepare a project specific occupational health and safety plan to address health and safety risks associated with the activities the environmental consultant will be carrying out on the site during remediation works.

As part of the safety management plan (SMP) to be prepared by the remediation contractor, the health and safety of site workers and nearby site users will be addressed when considering site security, excavation safety, vibration, noise, odour and dust levels. The plan will address the risks during the remediation works and ensure they are addressed. The plan will cover site specific requirements associated with the contaminants including but not necessarily limited to heavy metals, total recoverable hydrocarbons, and polycyclic aromatic hydrocarbons within surficial soil at the site which would likely require the use of personal protective equipment and dust suppression measures where necessary.

All work associated with the remediation of the site will conform at a minimum, to the requirements of the NSW Work Health and Safety Act 2011 and associated regulations.

Typically, the SMP plan will address the following issues:

- regulatory requirements;
- responsibilities;
- hazard identification and control;
- air monitoring (including action levels) during excavation and construction (if necessary);
- noise;
- odours;
- chemical hazard control;
- handling procedures;
- PPE;
- work zones;
- decontamination procedures;
- emergency response plans;
- contingency plans; and,
- incident reporting.

The plan will include emergency contact numbers such as police, fire brigade, hospital and contact details for all relevant personnel. Response to any incidents occurring on site will be in accordance with the plan.

15.1.1 ACCESS CONTROL

Access to the site will be restricted to authorised staff and contractors who have been inducted and appropriately trained for the works being undertaken. A fence or hoarding will be installed and maintained around the perimeter of the site. Signage, including remediation contractor details and contact numbers, will be erected near the gate at the site. The signage will remain displayed on the site entrance throughout the duration of the remediation works. The remediation contractor will control site access and will authorise visitors on an "as needed" basis.

15.1.2 PERSONAL PROTECTIVE EQUIPMENT

All site workers are to ensure that all staff and subcontractors engaged are in the possession of, and correctly use, appropriate PPE and clothing to assist in maintaining a safe workplace. The PPE is to be selected and used in accordance with the relevant Australian Standard and Client requirements. As a minimum, all personnel on-site shall wear the following items:

- Steel cap, ankle high lace up safety boots;
- Hard hat (with less than 3 years of use) with chin strap;
- Reflective clothing suitable for day and night conditions (i.e. high visibility clothing with reflective strips), complying with AS/NZS 4602 and AS/NZS 1906.4;
- Long sleeve shirts and long pants;
- Protective gloves (standard 3.3.3.1); and,
- Eye protection.

All other PPE requirements shall be identified in the Asbestos Management Control Plan, Contractors Safety Plan and/or SWMS.

15.2 ASBESTOS HANDLING PROCEDURE

All handling and management of ACM is to be undertaken in accordance the Asbestos Management Control Plan (AMCP) to be prepared by the contractor who must be aware of their legal obligations in relation to health and safety as specified in the Occupational Health and Safety Act 2011 and the Occupational Health and Safety Regulation 2017, along with all SafeWork NSW requirements.

The following guidance is supplementary to the AMCP, where in conflict with the AMCP the AMCP will prevail.

15.2.1 WORK ZONES

Designated work zones will be sectioned off around the proposed work area. An exclusion zone will be established around the location of site works, and a decontamination zone will be established immediately outside the exclusion zone.

Exclusion zones for intrusive activities are the areas where asbestos occur and will normally encompass an area of a minimum of 5 meters from the edge of the activity. The boundary of the exclusion zone will be marked with either barricades or hazard netting and appropriate signage indicating the presence of asbestos should be used. Personnel and equipment decontamination is required when exiting an exclusion zone for an intrusive activity. All individuals entering this area must be approved by the site operator.

In general, decontamination zones are established immediately outside the exclusion zone to minimise the migration of contaminants from the exclusion zone to clean areas and to reduce the exposure potential of individuals leaving the exclusion zone.

15.2.2 DUST CONTROL MEASURES

To minimise the potential for the asbestos impacted soils to become susceptible to being blown about as dust, during dry weather conditions, it is prudent that any open excavations and stockpiles of material be kept watered down and/or covered with a pegged plastic sheet.

15.2.3 PERSONNEL DECONTAMINATION

Personal decontamination must be undertaken each time workers leave the asbestos work area and at the completion of the asbestos removal work. Personal decontamination should be done within the asbestos work area where recontamination cannot occur.

- Personal decontamination must be undertaken each time workers leave the asbestos work area and at the completion of the asbestos removal work. Personal decontamination should be done within the asbestos work area where recontamination cannot occur. Refer to the SafeWork NSW *How to Safely Remove Asbestos: Code of Practice 2016* and the WHS Regulation 2017 for personal decontamination methods.
- For friable asbestos removal works a dry two stage decontamination unit will be set up adjacent to, and directly connected with, the asbestos work area.
- The two stages are divided into the dirty decontamination area, clean decontamination area. A clean changing area will be lined with 200µm thick polythene sheeting.
- When leaving the work area all site personal must enter the dirty decontamination area, vacuum clean or hose down all contaminated coveralls and footwear. Remove footwear and leave boots upside down within dirty decontamination area. Decontaminate while wearing protective clothing and respirator with water. Leave respirator on and remove coveralls and place in 200-micron thick polythene bag.
- Move to clean decontamination area and commence decontamination and remove respirator. Thoroughly wash hands, fingernails, face, head and respirator. Store the respirator in a suitable container within the clean decontamination area.
- Move to the clean change area, towel dry and change into clean clothes.

15.2.4 EQUIPMENT DECONTAMINATION

The AMCP must include a relevant protocol for decontamination of all plant that is moved from the asbestos removal area. No plant is to be moved from the asbestos removal areas without decontamination.

15.3 ENVIROMENTAL MANAGEMENT

15.3.1 STOCKPILE MANAGEMENT

Stockpiles will be designated and handled to ensure that the stockpiles are properly tracked and classified according to contaminant concentrations.

Soil must not leave the site as a result of vehicle, plant and equipment movements. To limit the potential for tracking of soil off-site via vehicle, plant or equipment movement:

- vehicles, plant and equipment on the site will be kept to a practical minimum;
- vehicle, plant and equipment entry to and exit from the site will be kept to a practical minimum; and,

- plant and equipment will be washed down before it leaves the site.

The remediation contractor will install a wheel wash facility or provide similar demonstrated management option, prior to commencement of work and maintain the wheel wash, or similar, in good operating condition during the works.

15.3.2 MATERIAL TRANSPORTING

The remediation contractor shall ensure that there is no material tracked onto the street and that loads are securely covered. Soil, earth, mud or similar materials must be removed from the roadway by sweeping, shovelling, or a means other than washing, on a daily basis or as required. Soil washings from wheels shall be collected and disposed of in a manner that does not pollute waters. All road rules shall be observed and the use of local roads shall be minimised.

The transporter of waste must:

- Before transporting the waste, certify that any part of the waste transport certificate for the waste that is required to be removed by the transporter has been completed accurately;
- Before transporting the waste, ensure that there is a consignment authorisation that authorises the transport of the waste; and,
- Carry in the vehicle transporting the waste the waste transport certificate for the waste.

A record of truck movements shall be kept in order to enable the waste to be tracked to the receiving location. The receiving location shall issue disposal dockets and these shall be reconciled against the truck movement records to ensure accountability for all materials transported from the site.

15.3.3 SOIL, WATER AND WASTE MANAGEMENT

Soil excavation works will be conducted in a manner that minimises the potential migration of impacted soil and water off-site. Sediment controls shall be erected downgradient of excavations to assist with sediment control. Soil erosion and sediment control measures shall be designed in accordance with the document *Managing Urban Stormwater–Soils & Construction Volume 1* (2004) by Landcom.

Stormwater may be managed through diversion (around excavation and stockpile areas) or detention (prior to controlled release). Detailed soil and water management plans shall be provided in the SMP for the remedial works. Work shall be suspended during periods of inclement weather.

In addition, A Construction Waste Management Plan is required to be prepared by a suitably qualified person in consultation with Council.

15.3.4 NOISE AND VIBRATION CONTROLS

Noise and vibration will be managed in accordance with any construction noise management plan, the EPA (2000) *Industrial Noise Policy*, the DECC (2009) *Interim Construction Noise Guidelines* and any further conditions specified by Council (i.e. in the development application).

Noise producing machinery and equipment will only be operated during working hours as approved by local Council and/or NSW EPA. Australian Standard AS2436-1981 Guide to noise control on construction, maintenance and demolition sites outlines guidelines for the minimisation of noise on construction and demolition sites and these will be followed at all times.

No “offensive noise” as defined under the Protection of the Environment Operations Act 1997 should be created during remediation works/activities. Mechanical plant, equipment and the like used during remediation works/activities will use practical and reasonable noise attenuating devices and measures to minimise noise being transmitted from the site.

All equipment and machinery must be properly maintained and operated in an efficient manner to minimise the emission of noise.

15.3.5 DUST AND ODOUR CONTROLS

Dust emissions shall be confined within the site boundary by implementing the following controls:

- erection of dust screens at site perimeter;
- securely covering all loads entering or exiting the site;
- wetting down excavated materials/excavations;
- covering stockpiles; and,
- sealing of site ingress/egress points.

Where asbestos materials are suspected, a Class A (friable) or Class B (non friable) asbestos removal licensed contractor will be required to coordinate the works and specify appropriate environmental control measures in accordance with existing legislation and guidance. Due to the nature of the contaminants, odour is not expected to be a significant environmental hazard.

15.3.6 REFUELING/STORAGE OF DANGEROUS GOODS

Any handling, storage and/or disposal of fuel, oil and other chemicals will be undertaken in accordance with the AS1940 – 2004: The Storage and Handling of Flammable and Combustible Liquids and/or the NSW EPA, 2014 Waste Classification Guidelines. All potentially hazardous substances on-site will have an appropriate safety data sheet (SDS) to be kept with the HESP.

If fuels are to be stored on-site or refuelling of plant of machinery is necessary, this will be done in appropriate areas such as designated storage trays or hardstand. Drip trays will be used to prevent spills impacting the ground surface during refuelling activities. Appropriate spill response kits will be accessible for use in the event of a leak or spill.

15.3.7 TRAFFIC

The number of truck movements per day will be assessed and determined as part of the project approvals. All traffic movements to and from the site are to be undertaken along routes approved by Council. Trucks are not to park in local streets while waiting to load or off-load materials at the site.

15.3.8 HOURS OF OPERATION

Working hours should be undertaken in accordance with the conditions of development consent. Any works to be conducted outside the normal working hours, needs to have prior agreement with Council.

15.3.9 PLANT DECONTAMINATION

At the conclusion of the works, excavators and other plant shall be parked within a designated washing area or wash bay. Decontamination should include removing all soil from the tracks, body and bucket of the excavator as far as reasonably practicable. The waste soil and water within the wash area should be removed and deposited according to its contaminate load.

15.4 INCIDENT RESPONSE

Response to an incident occurring on-site will be in accordance with the contractor's emergency and evacuation procedures and incident reporting procedures. A safety management plan and incident contact numbers are to be maintained in an on-site register. All other relevant emergency contact numbers such as police, fire brigade and hospital will be listed in the WH&S plan and posted on site for easy access.

15.4.1 EMERGENGY PREPAREDNESS AND RESPONSE

The remediation contractor will ensure that plans to respond to incidents and emergencies (e.g. fires, spills or other uncontrolled releases) have been prepared. The remediation contractor will ensure that all employees, sub-contractors and visitors to the site are made aware of the emergency protocols in place.

15.4.2 COMMUNICATION

Any complaints received from Government Departments, interest groups or the general public shall be managed in a professional manner and should be recorded. All complaints received shall be referred to the Eloura Holdings project manager who will adopt an appropriate course of action to manage and address the complainant's concerns in a timely manner.

15.5 COMMUNITY CONSULTATION

All owners and/or occupants of adjoining and opposite (across roadways) premises shall be notified of the remedial works program prior to works being commenced.

15.6 COMPLAINT REPORTING AND RESOLUTION

Complaints received from adjoining sites or the general public shall be directed to the remediation contractor Site supervisor. The Site supervisor shall maintain a Complaints Register (Date, Complainant Details, Nature of Complaint, Action Required, Responsibility, Due Date) to ensure that any concerns are recorded and addressed.

Within one working day of receiving the complaint, the remediation contractor shall prepare a written report detailing the nature of the complaint and all the actions taken to provide a solution.

16 LIMITATIONS

SCOPE OF SERVICES

This detailed site assessment and remedial action plan report (the report) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and WSP (scope of services). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

RELIANCE ON DATA

In preparing the report, WSP has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (the data). Except as otherwise stated in the report, WSP has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WSP will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP

ENVIRONMENTAL CONCLUSIONS

In accordance with the scope of services, WSP has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

On all sites, varying degrees of non-uniformity of the vertical and horizontal soil or groundwater conditions are encountered. Hence no monitoring, common testing or sampling technique can eliminate the possibility that monitoring or testing results/samples are not totally representative of soil and/or groundwater conditions encountered. The conclusions are based upon the data and the environmental field monitoring and/or testing and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions. Also, it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

Within the limitations imposed by the scope of services, the monitoring, testing, sampling and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the client and no other party. WSP assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of WSP or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

OTHER LIMITATIONS

WSP will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

The scope of services did not include any assessment of the title to or ownership of the properties, buildings and structures referred to in the report nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

17 REFERENCES

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APPENDIX A

FIGURES

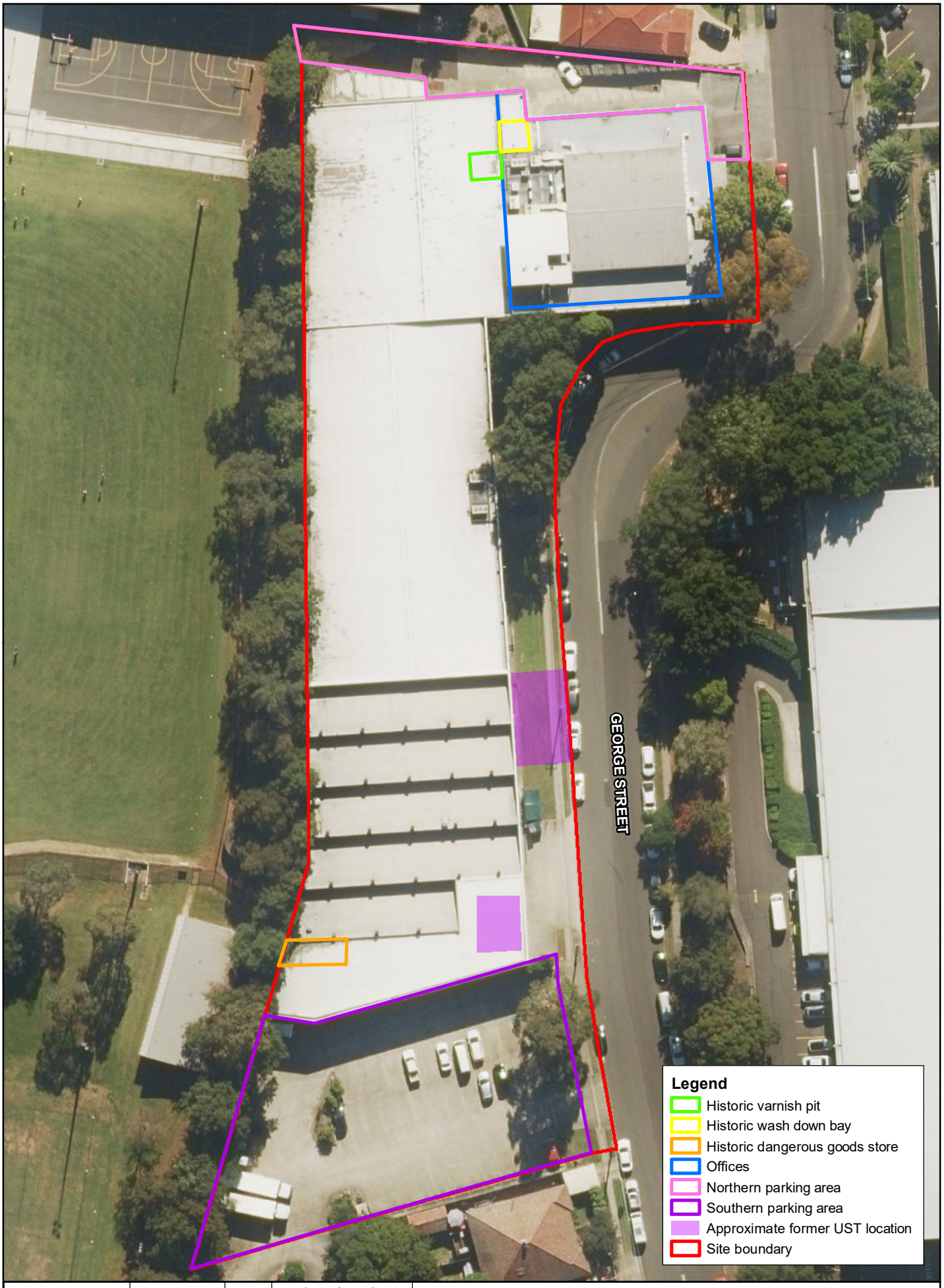
Map: PS109581_GIS_001_A	Author: HartS		
Date: 4/09/2018	Approved by: CJ		
Data source: LPI (2017)			

0 60 120 m

1:6,000

Coordinate system: GCS GDA 1994
Scale ratio correct when printed at A3

Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 1
Site locality



Map: PS109581_GIS_002_A	Author: HartS	
Date: 4/09/2018	Approved by: CJ	

Source: © Department of Finance, Services & Innovation 2018

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Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 2
Site layout plan

Eloura Holdings Pty Ltd

www.wsp.com

Map: PS109581_GIS_003_A	Author: HartS
Date: 4/09/2018	Approved by: CJ

Source: © Department of Finance, Services & Innovation 2018

1:750

Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 3
Sample location plan

Eloura Holdings Pty Ltd

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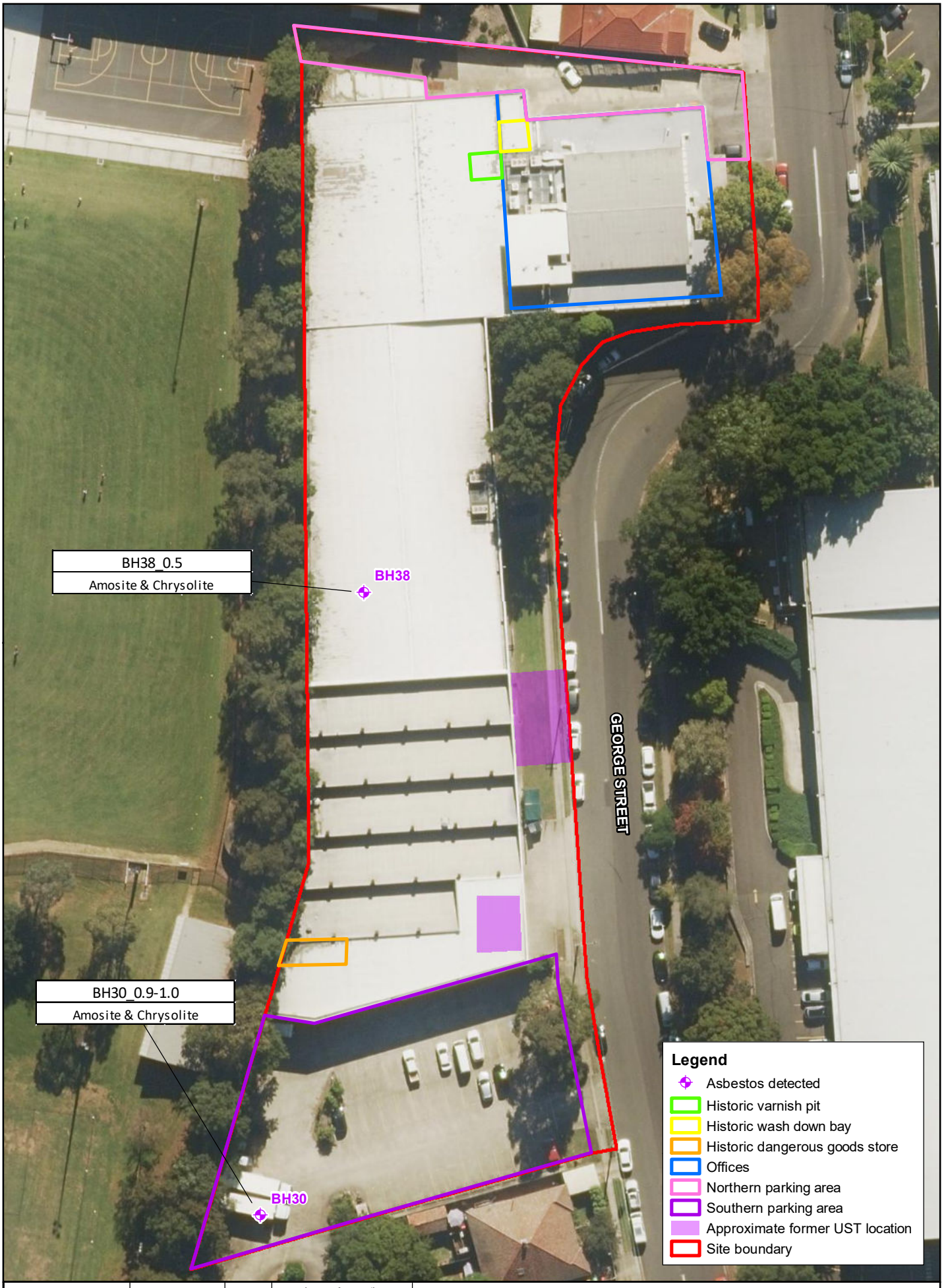

Map: PS109581_GIS_004_A	Author: HartS
Date: 4/09/2018	Approved by: CJ

Source: © Department of Finance, Services & Innovation 2018

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Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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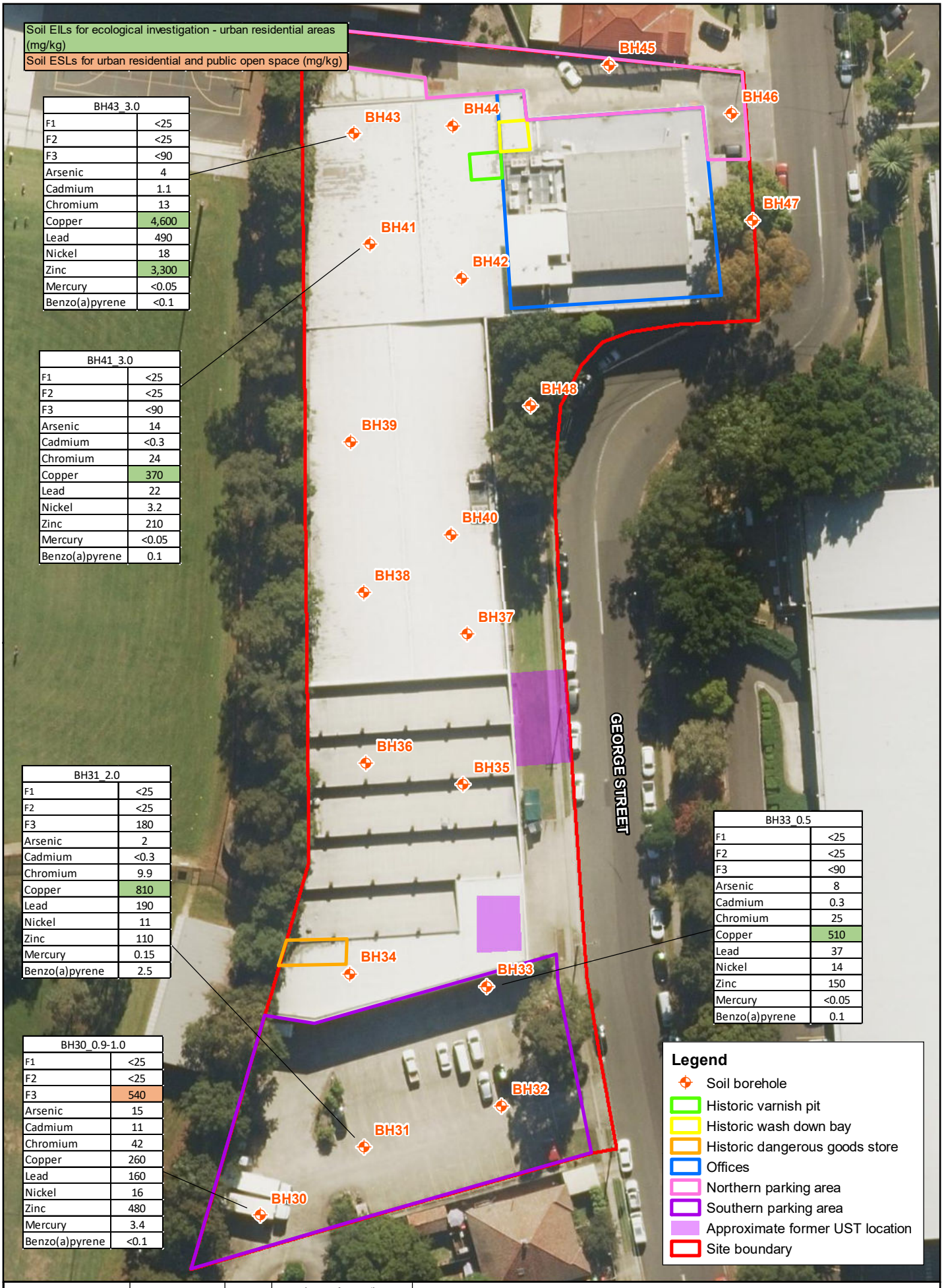
Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 4
Asbestos impact plan



BH43_3.0	
F1	<25
F2	<25
F3	<90
Arsenic	4
Cadmium	1.1
Chromium	13
Copper	4,600
Lead	490
Nickel	18
Zinc	3,300
Mercury	<0.05
Benzo(a)pyrene	<0.1

BH41_3.0	
F1	<25
F2	<25
F3	<90
Arsenic	14
Cadmium	<0.3
Chromium	24
Copper	370
Lead	22
Nickel	3.2
Zinc	210
Mercury	<0.05
Benzo(a)pyrene	0.1

BH31_2.0	
F1	<25
F2	<25
F3	180
Arsenic	2
Cadmium	<0.3
Chromium	9.9
Copper	810
Lead	190
Nickel	11
Zinc	110
Mercury	0.15
Benzo(a)pyrene	2.5

BH33_0.5	
F1	<25
F2	<25
F3	<90
Arsenic	8
Cadmium	0.3
Chromium	25
Copper	510
Lead	37
Nickel	14
Zinc	150
Mercury	<0.05
Benzo(a)pyrene	0.1

BH30_0.9-1.0	
F1	<25
F2	<25
F3	540
Arsenic	15
Cadmium	11
Chromium	42
Copper	260
Lead	160
Nickel	16
Zinc	480
Mercury	3.4
Benzo(a)pyrene	<0.1

Map: PS109581_GIS_005_A | Author: HartS
Date: 4/09/2018 | Approved by: CJ
Source: © Department of Finance, Services & Innovation 2018

1:750
Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 5
Soil impact plan

Eloura Holdings Pty Ltd

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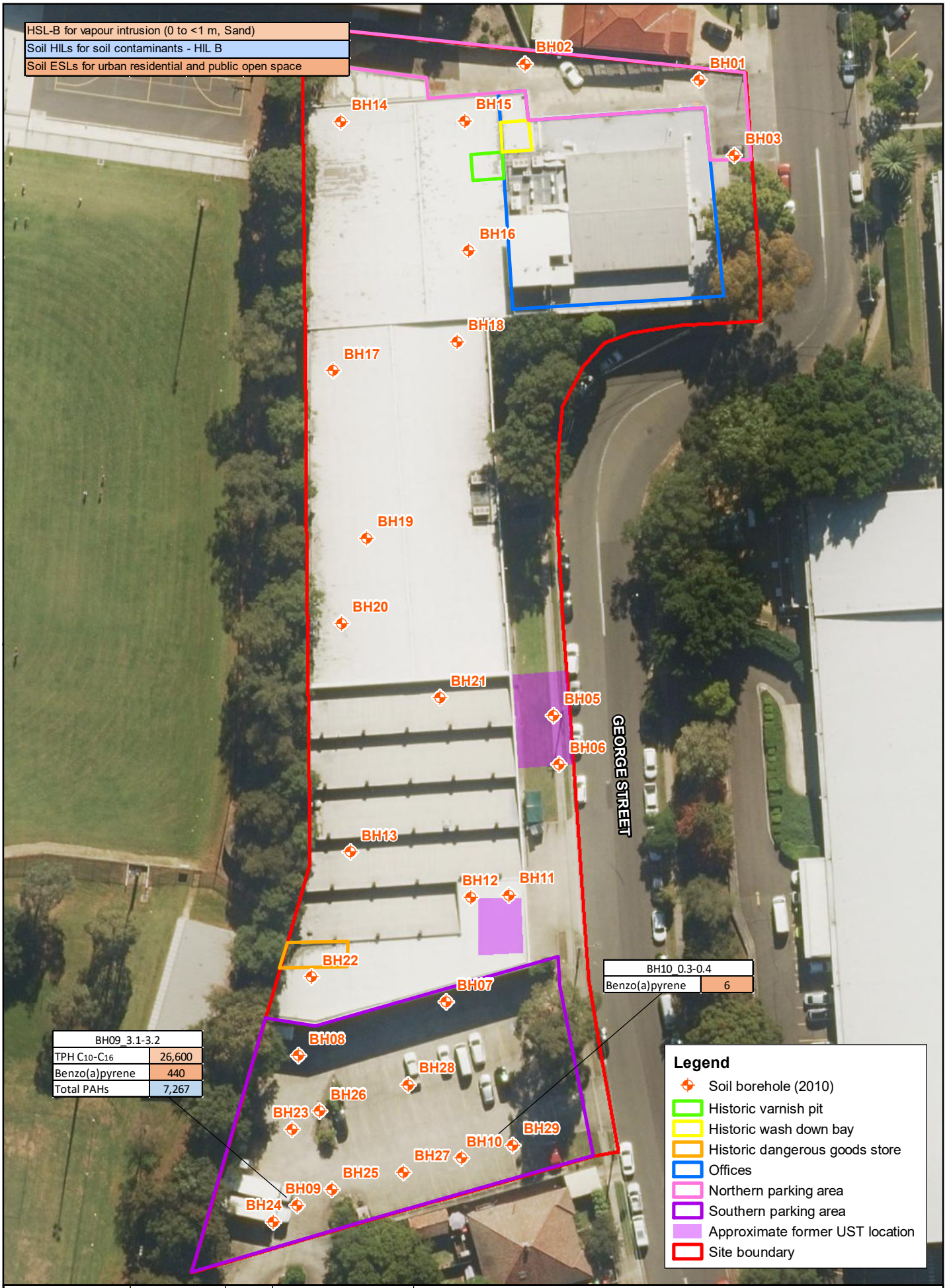

Map: PS109581_GIS_006_A | Author: HartS
Date: 4/09/2018 | Approved by: CJ
Source: © Department of Finance, Services & Innovation 2018

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Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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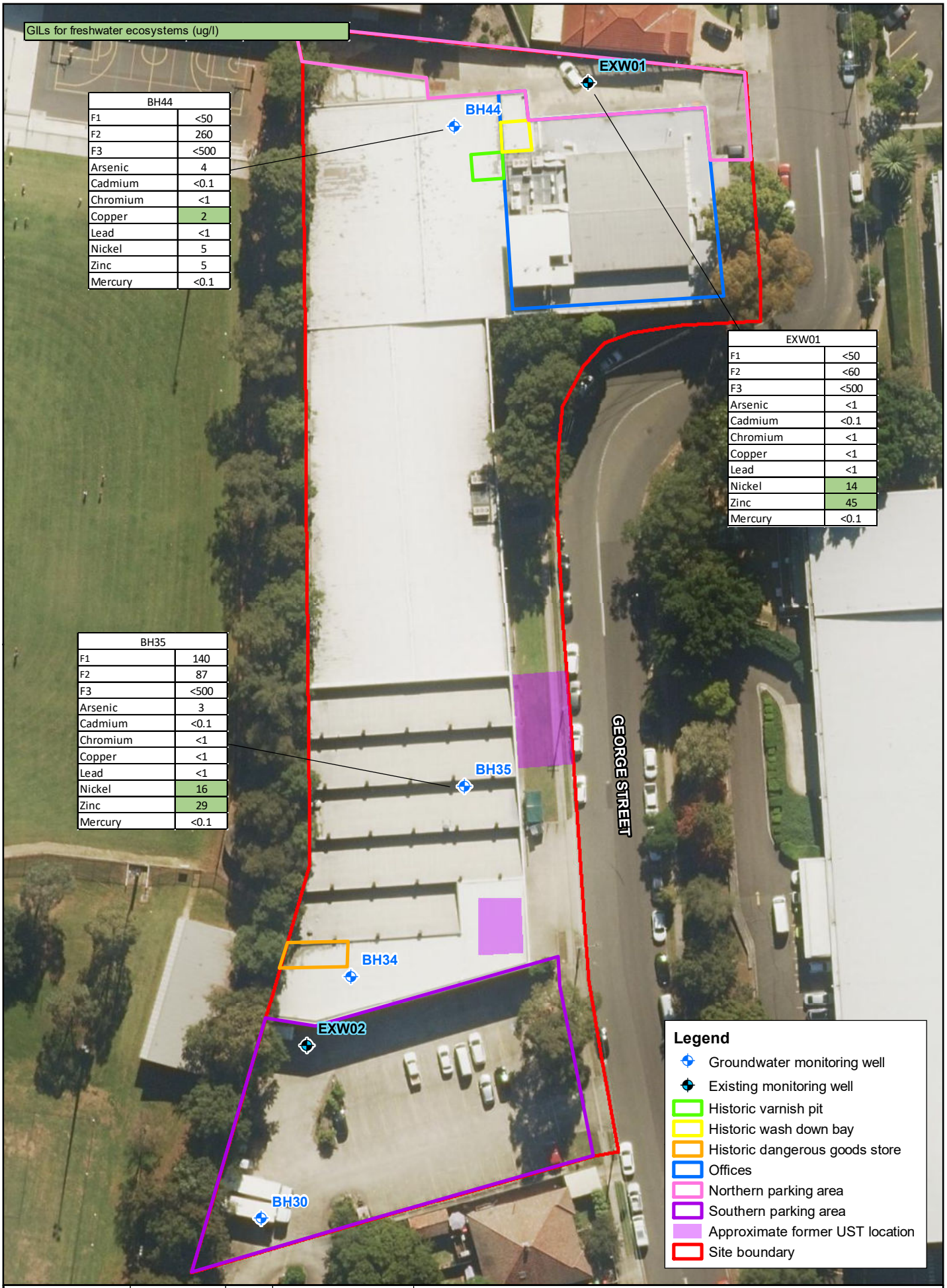
Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 6
Soil impact plan 2010



BH44	
F1	<50
F2	260
F3	<500
Arsenic	4
Cadmium	<0.1
Chromium	<1
Copper	2
Lead	<1
Nickel	5
Zinc	5
Mercury	<0.1

EXW01	
F1	<50
F2	<60
F3	<500
Arsenic	<1
Cadmium	<0.1
Chromium	<1
Copper	<1
Lead	<1
Nickel	14
Zinc	45
Mercury	<0.1

BH35	
F1	140
F2	87
F3	<500
Arsenic	3
Cadmium	<0.1
Chromium	<1
Copper	<1
Lead	<1
Nickel	16
Zinc	29
Mercury	<0.1

Map: PS109581_GIS_007_A	Author: HartS
Date: 4/09/2018	Approved by: CJ

Source: © Department of Finance, Services & Innovation 2018

1:750

Coordinate system: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A4

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Detailed Site Investigation and Remediation Action Plan
174-184 George Street, Concord West NSW 2138
Figure 7
Groundwater impact plan

Eloura Holdings Pty Ltd

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APPENDIX B

PHOTOGRAPHIC RECORD

Plate 1: Concrete thickness of 0.6 m encountered at BH43. Initial position terminated and second location cored with a concrete thickness of 0.3 m.

Plate 2: Concrete thickness of 0.25 m encountered at BH41.

Plate 3: Fill material encountered within BH40 to a depth of 2 m BGL. Natural material was encountered from 2 m BGL to 3 m BGL.

Plate 4: Fill material encountered within BH41 to a depth of 3 m BGL.

APPENDIX C

AERIAL PHOTOGRAPHS

Approximate site boundary

Historical Aerial Photograph 1930

Approximate site boundary

Historical Aerial Photograph 1951

Approximate site boundary

Historical Aerial Photograph 1970

Approximate site boundary

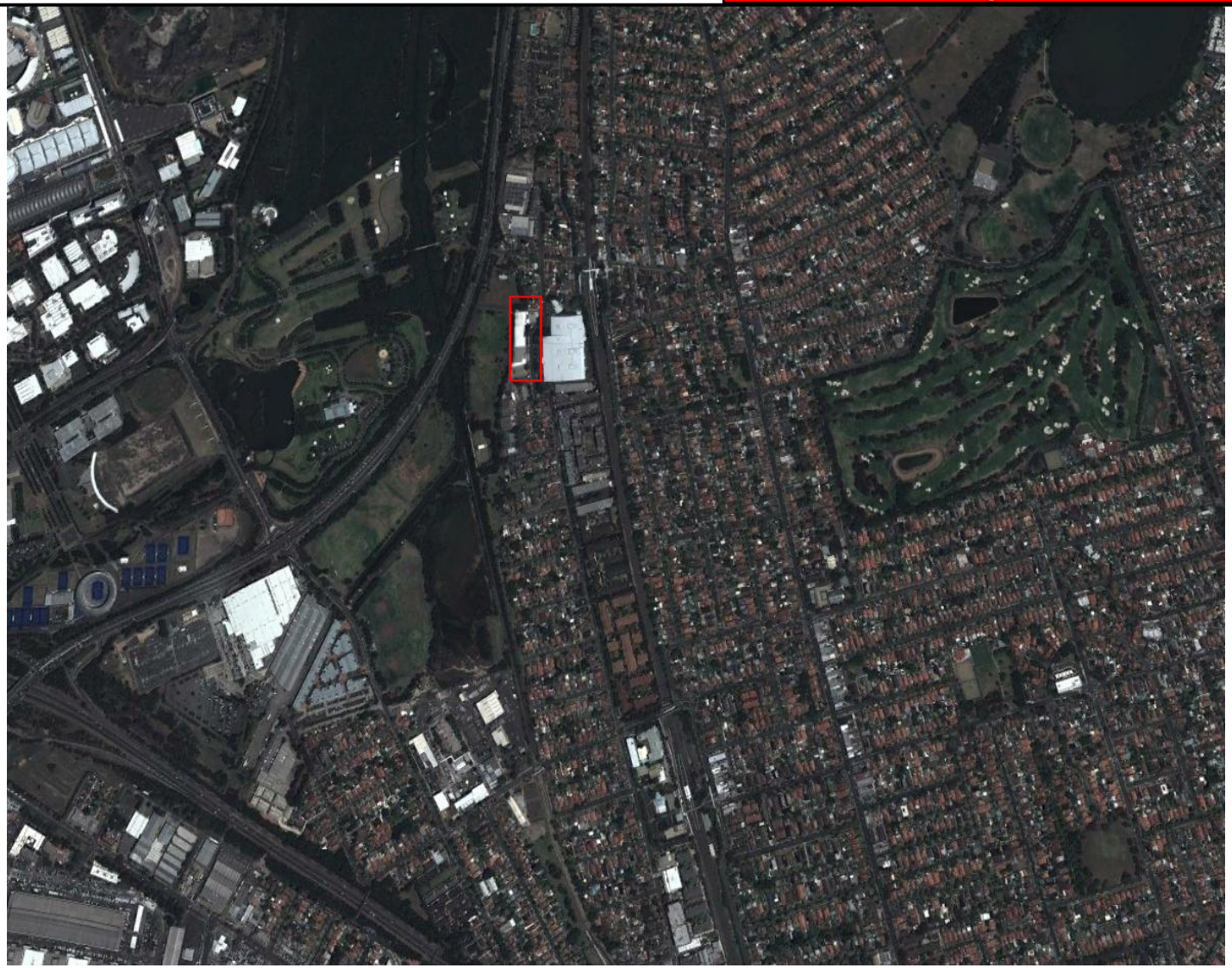
Historical Aerial Photograph 1978

Approximate site boundary

Historical Aerial Photograph 1986

Approximate site boundary

Historical Aerial Photograph 2002



Approximate site boundary

Historical Aerial Photograph 2012

APPENDIX D

BOREHOLE LOGS

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO.

BH30

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**19/7/18**
Project:	**176-184 George Street**	Date Completed:	**19/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**110 mm**	Driller Lic No:		Co-ords:	**E 151.083256 N -33.850541**

Borehole Information / Field Material Description

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			Grout	0.14	PID=0 ppm	J			CONCRETE: brown grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.30	PID=0 ppm	J			FILL: Clayey SAND: dark brown, fine, low plasticity clay, trace fine grained gravel			
HA				0.90	PID=0 ppm	J+B			FILL: Gravelly SAND: dark brown, fine to medium grained, sub-rounded to sub-angular, poorly graded gravel			
				1					FILL: Gravelly SAND: light yellow, fine grained sand, coarse grained gravel, well graded, sub-rounded gravel			
				1.70					FILL: Gravelly Clayey SAND: black, brown, white, fine to medium grained sand, fine grained gravel, angular, trace plastics and glass			
				2	PID=0 ppm	J						
			Bentonite	3	PID=0 ppm	J						
AS				3.10					SHALE: grey, laminated, inferred moderately to highly weathered, inferred very low to medium strength, some high strength fragments			
			Gravel	4								
			Screened from 4 mBGL t o 10 mBGL	5								
				5.16					SHALE: laminated dark grey clay (70%) and light grey silt (30%), layered, bedding 0-5deg			
				6								
				7								
				8								
NMLC				8.80					8.80 m: black laminate more dominant, 90% siltstone, 10% black			
				9								
				10.00					END OF BOREHOLE AT 10.00 m			

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO.

BH31

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**19/7/18**
Project:	**176-184 George Street**	Date Completed:	**19/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083427 N -33.850451**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (FB VL L MD D VD / VS S F ST VST H)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.15	PID=0 ppm	J			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.30					FILL: Silty SAND, brown, moist, fine to medium, loose			
HA					PID=0 ppm	J			FILL: Silty CLAY with gravel, dark brown black, moist, fine, soft, gravel with possibly bitumen			
				1	PID=0 ppm	J						
PT				2	PID=0 ppm	J+B						
				2.40					CLAY: brown grey, fine, soft, moist to wet			
				2.80	PID=0 ppm	J			END OF BOREHOLE AT 2.80 m			
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH32

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**19/7/18**
Project:	**176-184 George Street**	Date Completed:	**19/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083651 N -33.850399**

Borehole Information | **Field Material Description**

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.15	PID=5.4 ppm	J			CONCRETE grey, max aggregate 25 mm, poorly graded, sub-rounded			
									FILL: Silty SAND with gravel, brown, moist, fine to medium, loose			
				0.30	PID=6.8 ppm	J+B			FILL: Silty SAND with gravel, dark brown black, fine to medium, loose, with possible bitumen			
HA				0.60					Silty CLAY: brown red, fine, soft, slightly moist, slickensided			
				1	PID=3.2 ppm	J						
				1.40					CLAY: grey red, fine, dry, stiff			
PT				2	PID=2.0 ppm	J						
				2.20					END OF BOREHOLE AT 2.00 m			
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO.

BH33

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**19/7/18**
Project:	**176-184 George Street**	Date Completed:	**19/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083631 N -33.850237**

Borehole Information | **Field Material Description**

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.15	PID=0.6 ppm	J			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
HA				0.50	PID=0.6 ppm	J+B			FILL: Silty SAND with gravel, light grey brown, moist, loose, fine to medium			
				0.80					FILL: Silty SAND with gravel, dark brown black, fine to medium, loose, possibly with bitumen			
				1	PID=0.6 ppm	J			FILL: Silty CLAY with gravel, light brown, dry, fine, hard			
PT				1.30					CLAY: grey, red, yellow, dry, fine, slickensided			
				2.00 2	PID=0.6 ppm	J			CLAY: grey, red, dry, fine, slickensided			
				2.80					END OF BOREHOLE AT 2.80 m			
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH34

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Auger, percussion**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**110 mm**	Driller Lic No:		Co-ords:	**E 151.083409 N -33.850216**

Borehole Information | **Field Material Description**

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			Grout	0.20					CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
Solid Auger				1					FILL: Silty CLAY with gravel, dark brown, black, grey, dry, soft			
				2								
				3								
				4	PID=19 ppm	J+B						
			Bentonite									
			Screened from 5 mBGL to 8 mBGL	5.00 5	PID=75 ppm	J			Recovered as SHALE: grey, fine, laminated, weathered			
Percussion				5.50					5.5 m: becoming less weathered			
				6								
				7								
				8.00 8					END OF BOREHOLE AT 8.00 m			
				9								
				10								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO. **BH35**

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Auger, NMCL**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**110 mm**	Driller Lic No:		Co-ords:	**E 151.083599 N -33.849962**

Borehole Information / Field Material Description

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			Grout	0.10					CONCRETE: light grey, max aggregate 25 mm, poorly graded, sub-angular to angular, with minor voids, 5 mm steel re-enforcement at 45 mm			HC odour
				0.25	PID=87 ppm	J						
				0.40	PID=79 ppm	J			CONCRETE: light grey, max aggregate 20 mm, poorly graded, sub-angular to angular, with minor voids			HC odour
PT				1	PID=187 ppm	J			FILL: Clayey GRAVEL, dark brown, fine to coarse grained, poorly graded, angular, low plasticity clay			HC odour
									Silty CLAY: medium to high plasticity, red/orange-brown, trace fine to medium grained gravel			
				2.00 2	PID=130 ppm	J			2.00 m: 5 mm band of black, ashy material, fine grained, loose			HC odour
				2.20					Silty CLAY: high plasticity, brown, trace fine grained gravel			
AS			Bentonite	3								
				3.25					SHALE: dark brown, inferred highly weathered to moderately weathered, inferred very low-medium strength, bands of high strength			
			Gravel	4								
			Screened from 4 mBGL t o 10 mBGL	4.20					SHALE: fine grained, dark grey and brown, layered, bedding 0-5deg, iron staining throughout			
				5.00 5								
				5.10					SHALE: fine grained, dark grey and brown, layered, bedding 0-5deg, iron staining throughout			
									as above, with 5deg bedding			
NMLC				6.00 6					as above, less laminated			
				6.60					as above, brown laminae becoming light grey			
				7								
				8								
				8.50					as above, 90% siltstone, laminations less visible			
				9								
				10.00 10					END OF BOREHOLE AT 10.00 m			

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH36

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083441 N -33.849932**

Borehole Information

Field Material Description

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC									CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.25	PID=0 ppm	J			FILL: Silty SAND with gravel, grey, black, dry, loose			
				0.40	PID=16.5 ppm	J+B			FILL: Silty CLAY with gravel, light brown, grey, dry, gravel mostly shale			
HA				1.00 1	PID=27.1 ppm	J			Silty CLAY: mottled yellow, red, grey, dry, stiff, slickensided			
PT				1.80					1.8 m: becoming moist			
				2	PID=20.3 ppm	J						
				2.20					END OF BOREHOLE AT 2.20 m			
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH37

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.08361 N -33.849759**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.25	PID=18.2 ppm	J			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
HA				0.40	PID=1.4 ppm	J+B			FILL: COAL and CLINKER, black, dry, medium, loose			
				1.00 1	PID=11 ppm	J			FILL: Silty CLAY with gravel, light brown, grey, dry, gravel fine to medium, sub-angular			
PT				2	PID=11.1 ppm	J			FILL: Silty CLAY with gravel, mottled yellow, red, grey, dry, shale gravels			
				2.20					CLAY: dark brown, red, slightly moist, stiff slickensided			
				2.80					Silty CLAY: dark brown, black, moist, soft			
				3.00 3	PID=9 ppm	J			END OF BOREHOLE AT 3.00 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH38

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083443 N -33.8497**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC									CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.25	PID=0 ppm	J			FILL: COAL and CLINKER, black, dry, fine to medium, loose			
				0.40	PID=0 ppm	J+B			FILL: Silty CLAY with gravel, light grey, dry, sub-angular gravel			
HA				1.00 1	PID=0 ppm	J						
									As above, brown			
PT				2	PID=0 ppm	J						
				3.00 3	PID=19.1 ppm	J			CLAY: yellow, grey, dry, slikensided			
				3.20					END OF BOREHOLE AT 3.00 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH39

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083427 N -33.849496**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.25	PID=0 ppm	J+B			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.40	PID=0 ppm	J			FILL: coal and clinker, black, dry, fine to medium, loose			
HA				1	PID=0 ppm	J			FILL: Silty CLAY with gravel, light to dark brown, yellow, dry, fine, shale gravels, with coal and clinker			
PT				2	PID=0 ppm	J						
				3.00	PID=0 ppm	J						
									Silty CLAY: dark brown, slightly moist, soft			
				3.20					CLAY: red, yellow, grey, slightly moist, stiff			
				3.50					END OF BOREHOLE AT 3.50 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO. **BH40**

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083587 N -33.849624**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC									CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.25	PID=53.9 ppm	J			FILL: coal and clinker, black, dry, fine to medium, loose			
				0.40	PID=72 ppm	J+B			FILL: Silty CLAY with gravel, light brown, dry, fine, with shale gravels, with coal and clinker			
HA				0.80					FILL: Silty CLAY with gravel, light brown, yellow, grey, dry, stiff, with shale gravels			
				1	PID=68 ppm	J						
PT				2.00 2	PID=19 ppm	J			CLAY: brown, red, slightly moist becoming dark brown, stiff			
				3.00 3					END OF BOREHOLE AT 3.00 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO.

BH41

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083464 N -33.849229**

Borehole Information | **Field Material Description**

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m)	5 DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC										CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
					0.25	PID=0 ppm	J			FILL: COAL and CLINKER, black, dry, loose, medium			
HA					0.40	PID=0 ppm	J+B			FILL: Silty CLAY with gravel, light grey brown, dry, gravel mostly shale			
					1	PID=8.2 ppm	J						
					1.40					As above, brown, gravel fine to medium			
PT					2.00 2	PID=0 ppm	J			FILL: Silty CLAY with gravel, dark brown, red, dry, stiff, gravel red, brown, black, with coal and clinker			
					3.00 3	PID=93 ppm	J			END OF BOREHOLE AT 3.00 m			
					4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO. **BH42**

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083612 N -33.849277**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.25	PID=35.7 ppm	J			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
HA				0.40	PID=9.2 ppm	J+B			FILL: black, dry, medium, loose, trace coal and clinker			
				1	PID=0.0 ppm	J			FILL: Silty CLAY with gravel, light brown, dry, fine, shale gravels			
PT				1.40					FILL: Silty CLAY with gravel, dark brown, slightly moist, fine, shale gravels			
				2	PID=9.6 ppm	J						
				3	PID=14.2 ppm	J						
				3.20					FILL: Silty CLAY, dark brown black, slightly moist, fine to medium, with coal and clinker			
				3.50					CLAY: light grey, yellow, fine, slightly moist, stiff, with shale fragments			
				4	PID=43 ppm	J						
				4.20					END OF BOREHOLE AT 4.20 m			

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO. **BH43**

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083441 N -33.849079**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC									CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
				0.30					FILL: COAL and CLINKER, black, dry, loose, medium			
				0.40	PID=0 ppm	J			FILL: Silty CLAY with gravel, light brown, yellow, dry, stiff, gravel mostly shale			
					PID=0 ppm	J+B						
				1	PID=0 ppm	J+B						
PT												
				2	PID=0 ppm	J						
				2.90					FILL: COAL and CLINKER, red, brown, black, fine to medium			
				3	PID=0 ppm	J						
				3.20					END OF BOREHOLE AT 3.20 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH44

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**19/7/18**
Project:	**176-184 George Street**	Date Completed:	**19/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Auger, NMCL**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**110 mm**	Driller Lic No:		Co-ords:	**E 151.083602 N -33.849071**

Borehole Information / Field Material Description

1 METHOD	2 SUPPORT	3 WATER	4 WELL CONSTRUCTION	5 RL(m) / DEPTH(m)	6 FIELD TEST	7 SAMPLE	8 GRAPHIC LOG	9 USC SYMBOL	10 SOIL/ROCK MATERIAL FIELD DESCRIPTION	11 MOISTURE	12 RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	13 STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			Grout	0.12 0.22 0.32	PID=0 ppm PID=0 ppm	J J			CONCRETE: brown grey, max aggregate 20 mm, poorly graded, sub-rounded to sub-angular, with minor voids, 5 mm re-enforcement at 45 mm			
HA				1	PID=0 ppm	J+B			CONCRETE: light grey, max aggregate 20mm, poorly graded, sub-rounded			
				1.20 1.40					CONCRETE: dark grey, max aggregate 15 mm, poorly graded, sub-rounded to sub-angular, 5 mm re-enforcement at 240 mm			
				2.00 2	PID=0 ppm				FILL: Gravelly CLAY, low plasticity, dark brown, coarse grained, angular gravel 1.20 m: Increase in shale gravel fragments			
									FILL: Sandy CLAY, light brown, high plasticity, fine grained sand, with fine grained gravel 2.00 m: Becoming dark brown			
			Bentonite	3.00 3	PID=0 ppm				Silty CLAY: dark brown and orange, medium plasticity			
AS			Gravel	3.50					Silty CLAY: high plasticity, dark brown, trace fine to medium grained gravel			
			Screened from 4 mBGL t o 10 mBGL	4								
				4.70					SHALE: grey brown, inferred highly weathered to moderately weathered, inferred very low to medium strength			
				5 5.15					SHALE: laminated, 60% black and 40% dark brown laminate, bedding 0-5°, iron staining			
				6								
				6.25					as above, brown laminate becoming light grey, laminations becoming less dominant, 90% black siltstone			
NMLC				7								
				8								
				9								
				10.00 10					END OF BOREHOLE AT 10.00 m			

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE ENVIRONMENTAL LOG

BOREHOLE NO. **BH45**

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.083857 N -33.848992**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.15					CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
									FILL: Silty SAND with gravel, brown, dry, loose, gravel fine to medium			
				0.30	PID=0 ppm	J			FILL: Silty CLAY with gravel, brown, dry, stiff, shale and sandstone gravels			
					PID=0 ppm	J+B						
				1	PID=0 ppm	J						
				1.30					FILL: GRAVEL, sandstone gravel, light yellow, dry			
				1.40					FILL: Silty CLAY with gravel, dark brown, red, dry, stiff, shale and sandstone gravels			
PT				2	PID=0 ppm	J						
				2.20					FILL: Silty CLAY with gravel, brown, dry			
				3.00 3	PID=0 ppm	J			As above, brown, black, soft			
				3.20					END OF BOREHOLE AT 3.20 m			
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH46

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.084055 N -33.849061**

Borehole Information							Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.15	PID=0 ppm	J			CONCRETE: grey, max aggregate 25 mm, poorly graded, sub-rounded			
PT				0.50	PID=0 ppm	J			FILL: Silty Sandy CLAY with gravel, brown, dry, loose, gravel fine			
				1	PID=0 ppm	J			Silty CLAY: dark brown, red, dry, stiff			
				1.80					Silty CLAY: red, yellow, grey, stiff, slickensided			
				2.20					END OF BOREHOLE AT 2.20 m			
				2								
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH47

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Push tube**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.084086 N -33.849206**

Borehole Information							Field Material Description					
	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (FB VL L MD D VD / VS S F ST VST H)	STRUCTURE AND ADDITIONAL OBSERVATIONS
				0.10	PID=0 ppm	J			Silty SAND with gravel, brown, dry, sand fine to medium, gravel fine			
									Silty Sandy CLAY: brown, dry			
				0.50	PID=0 ppm	J			CLAY: brown, red, dry, stiff, slikensided			
				1.00 1	PID=0 ppm	J+B			END OF BOREHOLE AT 1.00 m			
				2								
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

BOREHOLE NO.

BOREHOLE ENVIRONMENTAL LOG

BH48

SHEET 1 OF 1

Client:	**Eloura Holdings**	Date Commenced:	**20/7/18**
Project:	**176-184 George Street**	Date Completed:	**20/7/18**
Borehole Location:	**Concord West, Sydney NSW 2138**	Recorded By:	**WC**
Project Number:	**PS109581**	Log Checked By:	**CJ**

Drill Model/Mounting:	**Hand auger**	Driller:	**Stratacore**	Surface RL:	
Borehole Diameter:	**80 mm**	Driller Lic No:		Co-ords:	**E 151.08372 N -33.849452**

Borehole Information							Field Material Description					
	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	WELL CONSTRUCTION	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY /CONSISTENCY (VS S F ST VST / FB VL L MD D VD H)	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC				0.20					CONCRETE: grey			
					PID=0 ppm	J+B			Fill: Silty Sandy CLAY with gravel: brown, dry, sand fine to medium, gravel fine, trace glass			
HA				0.50	PID=0 ppm	J			CLAY: brown, yellow, dry, stiff, slickensided			
				1.00 1	PID=0 ppm	J			END OF BOREHOLE AT 1.00 m			
				2								
				3								
				4								

This borehole log should be read in conjunction with WSP's accompanying standard notes.

APPENDIX E

SOIL ANALYTICAL RESULTS

Table E1: Analytical soil results: TRH & BTEXN
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample depth mBGL	TRH C6-C10	TRH >C10-C16	F1: C_6-C_{10} less BTEX	F2: >C_{10}-C_{16} less naphthalene	F3: >$C16$-C_{34}	F4: >C_{34}-C_{40}	Total >C_{10} - C_{40}	Benzene	Toluene	Ethylbenzene	m- & p-Xylene	o-Xylene	Total Xylene	Naphthalene
BH30_0.4-0.5	19-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	**540**	<120	540	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH31_0.2	19-Jul-18	SE181914	0.2	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH31_2.0	19-Jul-18	SE181914	1.9-2.0	<25	<25	<25	<25	180	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH32_0.2	19-Jul-18	SE181914	0.2	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH32_0.5	19-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH33_1.0	19-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH34_5.0	20-Jul-18	SE181914	5.0-5.1	<25	29	<25	29	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH35_0.9-1.0	20-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	<90	<120	<210	0.2	<0.1	<0.1	0.3	<0.1	0.4	<0.1
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	<25	<25	<25	<25	<90	<120	<210	0.3	<0.1	<0.1	0.3	<0.1	0.3	<0.1
BH36_0.5	20-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH36_1.0	20-Jul-18	SE181914	1.9-1.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH37_0.3	20-Jul-18	SE181914	0.3	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH37_2.0	20-Jul-18	SE181914	1.9-2.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH38_0.3	20-Jul-18	SE181914	0.3	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH38_3.0	20-Jul-18	SE181914	2.9-3.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH39_0.3	20-Jul-18	SE181914	0.3	<25	64	<25	64	230	<120	290	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH39_1.0	20-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	94	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	0.3
BH40_0.3	20-Jul-18	SE181914	0.3	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH40_1.0	20-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH41_0.5	20-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH42_0.3	20-Jul-18	SE181914	0.3	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH42_2.0	20-Jul-18	SE181914	1.9-2.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH42_4.0	20-Jul-18	SE181914	3.9-4.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH43_0.4	20-Jul-18	SE181914	0.4	<25	84	<25	84	200	<120	280	<0.1	0.1	0.5	1.2	0.6	1.8	0.1
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH44_0.3-0.42	19-Jul-18	SE181914	0.3-0.42	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH45_3.0	20-Jul-18	SE181914	2.9-3.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH46_1.0	20-Jul-18	SE181914	0.9-1.0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH47_0.1	20-Jul-18	SE181914	0.1	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH47_0.5	20-Jul-18	SE181914	0.4-0.5	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
BH48_0.3	20-Jul-18	SE181914	0.3	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.1
Practical quantitation limit				25	25	25	25	90	120	210	0.1	0.1	0.1	0.2	0.1	0.3	0.1
Soil investigation levels																	
HSL-B for vapour intrusion (0 to <1 m, Sand)[1]				45	110	NL	NL	NL	NL	NL	0.5	160	55	NL	NL	40	3
HSL D for vapour intrusion (0 to <1 m, Sand)[1]				NL	NL	260	NL	NL	NL	NL	3.0	NL	NL	NL	NL	NL	NL
ESLs for urban residential and public open space[2]				-	-	180	120	300	2,800	-	50	85	70	-	-	105	-
ESLs for commercial/industrial [2]				-	-	215	170	1,700	3,300	-	75	135	165	-	-	180	-

Notes:
Concentration expressed in mg/kg unless otherwise stated
[1] NEPM (2013) Schedule B1 - Investigation levels for soil and groundwater
[2] Ecological screening levels – profile of coarse soil texture, Schedule B1 Investigation Levels for Soil and Groundwater NEPM (2013).
NL - non limiting

BOLD	Concentration exceeding HSL
BOLD	Concentrations exceedinding ESLs

Table E2 - Analytical soil results: Metals
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample Depth	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
BH30_0.4-0.5	19-Jul-18	SE181914	0.4-0.5	1	<0.3	100	47	15	100	84	<0.05
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	15	11	42	260	160	16	480	3.4
BH31_0.2	19-Jul-18	SE181914	0.2	3	<0.3	58	48	19	63	60	<0.05
BH31_2.0	19-Jul-18	SE181914	1.9-2.0	2	<0.3	9.9	**810**	190	11	110	0.15
BH32_0.2	19-Jul-18	SE181914	0.2	6	0.3	36	48	33	44	80	<0.05
BH32_0.5	19-Jul-18	SE181914	0.4-0.5	5	<0.3	60	29	12	75	55	<0.05
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	8	0.3	25	**510**	37	14	150	<0.05
BH33_1.0	19-Jul-18	SE181914	0.9-1.0	8	0.3	31	280	39	20	110	0.11
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	8	0.6	8	28	18	34	150	<0.05
BH34_5.0	20-Jul-18	SE181914	5.0-5.1	7	0.5	7.8	38	18	37	160	<0.05
BH35_0.9-1.0	20-Jul-18	SE181914	0.9-1.0	5	<0.3	8.5	19	16	0.6	14	<0.05
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	3	<0.3	12	22	26	1.6	11	<0.05
BH36_0.5	20-Jul-18	SE181914	0.4-0.5	6	<0.3	13	19	22	2	11	<0.05
BH36_1.0	20-Jul-18	SE181914	1.9-1.0	5	<0.3	8.4	15	18	0.6	6	<0.05
BH37_0.3	20-Jul-18	SE181914	0.3	3	<0.3	8.4	32	42	5.3	32	0.17
BH37_2.0	20-Jul-18	SE181914	1.9-2.0	2	<0.3	2.1	9.5	16	0.8	5.7	<0.05
BH38_0.3	20-Jul-18	SE181914	0.3	8	<0.3	6.1	25	40	12	66	<0.05
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	5	<0.3	15	13	25	1.9	8.7	<0.05
BH38_3.0	20-Jul-18	SE181914	2.9-3.0	13	<0.3	7.2	8.9	9	1.3	18	<0.05
BH39_0.3	20-Jul-18	SE181914	0.3	5	<0.3	8.6	26	68	9.7	38	0.13
BH39_1.0	20-Jul-18	SE181914	0.9-1.0	4	<0.3	12	28	32	5.4	34	0.07
BH40_0.3	20-Jul-18	SE181914	0.3	3	<0.3	5.8	22	45	11	43	<0.05
BH40_1.0	20-Jul-18	SE181914	0.9-1.0	5	<0.3	15	12	20	2	8	<0.05
BH41_0.5	20-Jul-18	SE181914	0.4-0.5	3	<0.3	4.7	16	18	1.6	6.6	<0.05
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	14	<0.3	24	**370**	22	3.2	210	<0.05
BH42_0.3	20-Jul-18	SE181914	0.3	3	<0.3	7.3	18	16	5.1	17	<0.05
BH42_2.0	20-Jul-18	SE181914	1.9-2.0	4	<0.3	20	14	21	2.6	8.8	<0.05
BH42_4.0	20-Jul-18	SE181914	3.9-4.0	11	<0.3	1.3	19	24	2.9	8.2	<0.05
BH43_0.4	20-Jul-18	SE181914	0.4	6	0.5	11	37	220	16	170	<0.05
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	4	1.1	13	**4,600**	490	18	**3,300**	<0.05
BH44_0.3-0.42	19-Jul-18	SE181914	0.3-0.42	4	<0.3	8.5	78	31	8.5	65	<0.05
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	6	<0.3	11	18	24	1.1	12	<0.05
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	3	<0.3	4.7	24	20	2.9	25	<0.05
BH45_3.0	20-Jul-18	SE181914	2.9-3.0	24	<0.3	25	22	15	2.6	25	<0.05
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	5	<0.3	22	9.5	18	6.7	13	<0.05
BH46_1.0	20-Jul-18	SE181914	0.9-1.0	5	<0.3	19	9.7	19	8.6	23	<0.05
BH47_0.1	20-Jul-18	SE181914	0.1	6	<0.3	14	29	49	6.3	48	0.08
BH47_0.5	20-Jul-18	SE181914	0.4-0.5	4	<0.3	18	7.3	100	4.8	9.1	<0.05
BH48_0.3	20-Jul-18	SE181914	0.3	15	0.5	28	63	54	6.9	81	<0.05
Practical quantitation limit				1	0.3	0.3	0.5	1	0.5	2	0.05
Soil investigation levels											
HILs for soil contaminants - HIL B [1]				500	150	500	30,000	1,200	1,200	60,000	120
HILs for soil contaminants - HIL D [1]				3,000	900	3,600	240,000	1,500	6,000	400,000	730
Soil EILs for ecological investigation - urban residential areas [2]				100	-	410	280	1,100	200	570	-
Soil EILs for ecological investigation - commercial/industrial [2]				160	-	670	310	1,800	350	850	-

Notes:
Concentration expressed in mg/kg unless otherwise stated
[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(1) Health investigation levels for soil contaminants.
[2] NEPC (2013) NEPM - Schedule B1-Investigation Levels for Soil and Groundwater - Table 1B(1) -(5) Soil-specific and calculated EILs.
NL - non limiting

BOLD	Concentrations exceeding HILs
BOLD	Concentrations exceeding EILs

Table E3- Analytical soil results: PAH's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample Depth	Naphthalene	2-methylnaphthalene	1-methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b&j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene	Benzo(a)pyrene TEQ	Total PAH (18)
BH30_0.4-0.5	19-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.3	<0.1	0.6	0.5	0.3	0.3	0.4	0.2	0.3	0.2	<0.1	0.2	0.4	3.2
BH31_0.2	19-Jul-18	SE181914	0.2	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	<0.2	<0.8
BH31_2.0	19-Jul-18	SE181914	1.9-2.0	0.1	<0.1	<0.1	0.5	<0.1	0.1	1.5	0.4	3.5	3.4	2	1.8	2.9	1.1	**2.5**	1.2	0.2	0.9	3.4	22
BH32_0.2	19-Jul-18	SE181914	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	<0.1	<0.1	<0.2	<0.8
BH32_0.5	19-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	0.3	0.1	0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.2	1.5
BH33_1.0	19-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	0.4	0.2	0.2	0.4	0.2	0.3	0.2	<0.1	0.2	0.4	2.5
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	0.1	0.6	0.4	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	1.6
BH34_5.0	20-Jul-18	SE181914	5.0-5.1	0.2	0.6	0.4	<0.1	<0.1	0.1	0.8	0.1	0.5	0.6	0.3	0.3	0.3	0.1	0.2	<0.1	<0.1	0.1	0.3	4.5
BH35_0.9-1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH36_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH36_1.0	20-Jul-18	SE181914	1.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.3	0.3	0.2	0.1	0.2	0.1	0.2	<0.1	<0.1	<0.1	<0.2	1.4
BH37_0.3	20-Jul-18	SE181914	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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH37_2.0	20-Jul-18	SE181914	1.9-2.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH38_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.6	0.4	0.2	0.2	0.2	0.1	0.2	<0.1	<0.1	<0.1	0.2	2.2
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH38_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH39_0.3	20-Jul-18	SE181914	0.3	0.5	0.3	0.6	0.1	<0.1	<0.1	0.4	<0.1	0.5	0.5	0.3	0.3	0.3	0.1	0.2	<0.1	<0.1	<0.1	0.3	4
BH39_1.0	20-Jul-18	SE181914	0.9-1.0	0.3	0.3	0.3	0.3	<0.1	0.2	0.9	0.2	1	1.3	0.6	0.6	0.7	0.4	0.6	0.3	<0.1	0.2	0.8	8.1
BH40_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	<0.1	<0.1	0.3	1.6
BH40_1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH41_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	0.2	0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.2	1.1
BH42_0.3	20-Jul-18	SE181914	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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH42_2.0	20-Jul-18	SE181914	1.9-2.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH42_4.0	20-Jul-18	SE181914	3.9-4.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH43_0.4	20-Jul-18	SE181914	0.4	0.8	0.3	0.2	<0.1	<0.1	<0.1	0.4	<0.1	0.4	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	2.4
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH44_0.3-0.4	19-Jul-18	SE181914	0.3-0.42	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH45_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH46_1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH47_0.1	20-Jul-18	SE181914	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.5	0.5	0.3	0.3	0.4	0.2	0.3	0.2	<0.1	0.1	0.4	2.9
BH47_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
BH48_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	<0.1	<0.1	0.3	1.4
Practical quantitation limit				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8
Soil investigation levels																							
Soil HILs for soil contaminants - HIL B [1]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	400
Soil HILs for soil contaminants - HIL D [1]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	4,000
Soil EILs for ecological investigation - urban residential areas [2]				170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil EILs for ecological investigation - commercial/industrial [2]				370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil ESLs for urban residential and public open space [3]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-
Soil ESLs for commercial/industrial [3]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-

Notes:

Concentration expressed in mg/kg unless otherwise stated

[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(1) Health investigation levels for soil contaminants.

[2] NEPC (2013) NEPM - Schedule B1-Investigation Levels for Soil and Groundwater - Table 1B(1) -(5) Soil-specific and calculated EILs.

[3] Ecological screening levels – profile of coarse soil texture, Schedule B1 Investigation Levels for Soil and Groundwater NEPM (2013).

NL - non limiting

BOLD Concentrations exceeding HILs

BOLD Concentrations exceeding EILs

BOLD Concentrations exceeding ESLs

Table E4 - Analytical soil results: OCP's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample Depth	Aldrin	Alpha BHC	Alpha Chlordane	Alpha Endosulfan	Beta BHC	Beta Endosulfan	Delta BHC	Dieldrin	Endosulfan sulphate	Endrin	Endrin Aldehyde	Endrin Ketone	Gamma Chlordane	Heptachlor	Heptachlor epoxide	Hexachlorobenzene (HCB)	Isodrin	Lindane	Methoxychlor	Mirex	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT + DDE + DDD	Total CLP OC Pesticides	trans-Nonachlor
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH31_2.0	19-Jul-18	SE181914	2.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH32_0.5	19-Jul-18	SE181914	0.4-05	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH36_1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH37_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH39_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	0.3	<1	<0.1
BH40_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH42_0.3	20-Jul-18	SE181914	0.3	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
BH47_0.1	20-Jul-18	SE181914	0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<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	<1	<0.1
Practical quantitation limit				0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	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	1	0.1
Soil investigation levels																													
Soil HILs for soil contaminants - HIL B [1]				-	-	-	-	-	-	-	-	-	20	-	-	-	10	-	20	-	-	500	20	-	-	-	600	-	-
Soil HILs for soil contaminants - HIL D [1]				-	-	-	-	-	-	-	-	-	100	-	-	-	50	-	80	-	-	2,500	100	-	-	-	3,600	-	-
Soil EILs for ecological investigation - urban residential areas [2]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180	-	-	-
Soil EILs for ecological investigation - commercial/industrial [2]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640	-	-	-

Notes:
Concentration expressed in mg/kg unless otherwise stated

[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(1) Health investigation levels for soil contaminants.

[2] NEPC (2013) NEPM - Schedule B1-Investigation Levels for Soil and Groundwater - Table 1B(1) -(5) Soil-specific and calculated EILs.

NL - non limiting

BOLD Concentrations exceeding HILs

BOLD Concentrations exceeding EILs

Table E5 - Analytical soil results: SVCH's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample Depth	Pentachloroethane	Hexachlorobutadiene	1,3-dichlorobenzene	1,4-dichlorobenzene	1,2-dichlorobenzene	Hexachloroethane	1,2,4-trichlorobenzene	Hexachloropropene	1,2,3,5 & 1,2,4,5-tetrachlorobenzene	Hexachlorocyclopentadiene	1,2,3,4-tetrachlorobenzene	1/2-tetrachlorobenzene	Pentachlorobenzene	Hexachlorobenzene (HCB)	Pentachloronitrobenzene
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH31_2.0	19-Jul-18	SE181914	2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH32_0.5	19-Jul-18	SE181914	0.4-05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH36_1.0	20-Jul-18	SE181914	0.9-1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH37_0.3	20-Jul-18	SE181914	0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH39_0.3	20-Jul-18	SE181914	0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH40_0.3	20-Jul-18	SE181914	0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH42_0.3	20-Jul-18	SE181914	0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
BH47_0.1	20-Jul-18	SE181914	0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.1	<0.5
Practical quantitation limit				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	0.5	1	0.5	0.1	0.5
Soil investigation levels																		
Soil HILs for soil contaminants - HIL B [1]				-	-	-	-	-	-	-	-	-	-	-	-	-	15	-
Soil HILs for soil contaminants - HIL D [1]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil EILs for ecological investigation - urban residential areas [2]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil EILs for ecological investigation - commercial/industrial [2]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Concentration expressed in mg/kg unless otherwise stated

[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(1) Health investigation levels for soil contaminants.

[2] NEPC (2013) NEPM - Schedule B1-Investigation Levels for Soil and Groundwater - Table 1B(1) -(5) Soil-specific and calculated EILs.

NL - non limiting

BOLD Concentration exceeding HSLs

BOLD Concentrations exceeding EILs

Table E6 - Analytical soil results: PCB's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Sample Depth	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1262	Arochlor 1268	Total PCBs (Arochlors)
BH30_0.9-1.0	19-Jul-18	SE181914	0.9-1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<1
BH31_2.0	19-Jul-18	SE181914	2.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH32_0.5	19-Jul-18	SE181914	0.4-05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH33_0.5	19-Jul-18	SE181914	0.4-0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH34_4.0	20-Jul-18	SE181914	4.0-4.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH35_2.0	20-Jul-18	SE181914	1.9-2.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH36_1.0	20-Jul-18	SE181914	0.9-1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH37_0.3	20-Jul-18	SE181914	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH38_1.0	20-Jul-18	SE181914	0.9-1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH39_0.3	20-Jul-18	SE181914	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH40_0.3	20-Jul-18	SE181914	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH41_3.0	20-Jul-18	SE181914	2.9-3.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH42_0.3	20-Jul-18	SE181914	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH43_3.0	20-Jul-18	SE181914	2.9-3.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH44_1.0-1.1	19-Jul-18	SE181914	1.0-1.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH45_0.5	20-Jul-18	SE181914	0.4-0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH46_0.5	20-Jul-18	SE181914	0.4-0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
BH47_0.1	20-Jul-18	SE181914	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
Practical quantitation limit				0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1
Soil investigation levels													
Soil HILs for soil contaminants - HIL B [1]				-	-	-	-	-	-	-	-	-	1
Soil HILs for soil contaminants - HIL D [1]				-	-	-	-	-	-	-	-	-	7
Soil EILs for ecological investigation - urban residential areas [2]				-	-	-	-	-	-	-	-	-	-
Soil EILs for ecological investigation - commercial/industrial [2]				-	-	-	-	-	-	-	-	-	-

Notes:
Concentration expressed in mg/kg unless otherwise stated
[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(1) Health investigation levels for soil contaminants.
[2] NEPC (2013) NEPM - Schedule B1-Investigation Levels for Soil and Groundwater - Table 1B(1) -(5) Soil-specific and calculated EILs.
NL - non limiting

BOLD	Concentration exceeding HSL
BOLD	Concentration exceeding EILs

Table E7 - Analytical soil results: Asbestos
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Sample depth (mBGL)	Soil Matrix	Date sampled	Laboratory report no.	Asbestos ID in soil	Asbestos quantification in soil		
					ACM visible at surface	Asbestos type detected	>7mm ACM	<7mm AF/FA
Units							%w/w	%w/w
PQL							0.01	0.001
BH30_0.9-1.0	0.9-1.0	Fill	14-May-18	95673	No	Amosite & Chrysolite	-	-
BH31_2.0	1.9-2.0	Fill	14-May-18	95673	No	NAD	-	-
BH32_0.5	0.4-0.5	Fill	15-May-18	95673	No	NAD	-	-
BH33_0.5	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH34_4.0	4.0-4.1	Fill	14-May-18	95673	No	NAD	-	-
BH36_0.5	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH37_0.5	0.4-0.5	Fill	15-May-18	95673	No	NAD	-	-
BH38_0.5	0.4-0.5	Fill	15-May-18	95673	No	Amosite & Chrysolite	-	-
BH39_0.3	0.3	Fill	14-May-18	95673	No	NAD	-	-
BH40_0.5	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH41_3.0	2.9-3.0	Fill	15-May-18	95673	No	NAD	-	-
BH42_0.5	0.4-0.5	Fill	15-May-18	95673	No	NAD	-	-
BH43_0.4	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH44_1.0-1.1	1.0-1.1	Fill	14-May-18	95673	No	NAD	-	-
BH45_0.5	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH46_0.5	0.4-0.5	Fill	14-May-18	95673	No	NAD	-	-
BH47_0.1	0.1	Natural	15-May-18	95673	No	NAD	-	-
BH48_0.3	0.3	Natural	15-May-18	95673	No	NAD	-	-
HSL B - Bonde ACM [1]					Not visible in soil	-	0.04	**-**
HSL B - Friable asbestos and asbestos fines [1]						**-**	-	0.001
HSL D - Bonded ACM [1]					Not visible in soil	-	0.05	-
HSL D - Friable asbestos and asbestos fines [1]						-	-	0.001

Notes:
[1] NEPC (2013) NEPM - Schedule B-1 Investigation Levels for Soil and Groundwater - Table 1A(3) Soil HSLs
ACM = asbestos containing material
NAD = No asbestos detected

BOLD	HSL B exceedance
BOLD	HSL D exceedance

APPENDIX F

GROUNDWATER ANALYICAL RESULTS

Table F1 - Groundwater gauging data
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Well ID	Location	Guaging Date	Well Depth (mBTOC)	Depth to Water (mBTOC)	Depth to Product (mBOTC)	Apparent LNAPL Thickness (m)
EXW01	On-site	26-Jul-18	6.68	4.29	-	-
EXW02	On-site	26-Jul-18	7.20	Dry	-	-
BH30	On-site	26-Jul-18	6.41	6.40	-	-
BH34	On-site	26-Jul-18	8.00	7.92	-	-
BH35	On-site	26-Jul-18	10.56	6.04	-	-
BH44	On-site	26-Jul-18	10.25	6.06	-	-

mAHD = metres Australian Height Datum
mBTOC = metres below top of casing
-- = no data available

Table F2 - Groundwater quality parameters
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Well ID	Sampling Date	pH	Conductivity	Redox	Corrected Redox	Dissolved Oxygen	Temperature
			(µS/cm	(mV)	(mV)	(ppm)	(°C)
EXW01	26-Jul-18	6.99	1,433	114	313	2.71	18.8
BH35	26-Jul-18	7.25	9,960	19	218	3.27	17.6
BH44	26-Jul-18	7.61	25,700	104	303	5.1	18.1

Table F3 - Analytical groundwater results: TRH & BTEXN
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Depth to Water mBTOC	TRH C_6-C_{10}	TRH >C_{10}-C_{16}	F1: C_6-C_{10} less BTEX	F2: >C_{10}-C_{16} less naphthalene	F3: >$C1_6$-C_{34}	F4: >C_{34}-C_{40}	Total >C_{10} - C_{40}	Benzene	Toluene	Ethylbenzene	m- & p-Xylene	o-Xylene	Naphthalene
EXW01	26-Jul-18	SE181953	4.29	<50	<60	<50	<60	<500	<500	<650	<0.5	<0.5	<0.5	<1	<0.5	<0.5
BH35	26-Jul-18	SE181953	6.04	160	88	140	87	<500	<500	<650	6.7	3.6	0.6	6.0	2.4	1.0
BH44	26-Jul-18	SE181953	6.06	<50	260	<50	260	<500	<500	700	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Practical quantitation limit				50	60	50	60	500	500	650	0.5	0.5	0.5	1.0	0.5	0.5
Groundwater investigation levels																
HSL B for vapour intrusion (4 m to <8 m, Sand) [1]				-	-	1,000	1,000	-	-	-	800	NL	NL	NL	NL	NL
HSL B for vapour intrusion (8 m+, Sand) [1]				-	-	1,000	1,000	-	-	-	900	NL	NL	NL	NL	NL
HSL D for vapour intrusion (4 m to <8 m, Sand) [1]				-	-	6,000	NL	-	-	-	5,000	NL	NL	NL	NL	NL
HSL D for vapour intrusion (8 m+, Sand) [1]				-	-	7,000	NL	-	-	-	5,000	NL	NL	NL	NL	NL
GILs for Marine ecosystem [2]				-	-	-	-	-	-	-	500	-	-	350	200	50

Notes:
Concentration expressed in µg/L unless otherwise stated
[1] NEPM (2013) *Schedule B1 - Investigation levels for soil and groundwater*
[2] ANZECC/ARMCANZ (2000) *Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values*
ID - insufficient data to derive an investigation level
NL - non limiting
BOLD Concentration exceeding HSL
BOLD Concentration exceeding freshwater ecosystem investigation levels

Table F4 - Analytical groundwater results: Metals
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Depth to Water mBTOC	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
EXW01	26-Jul-18	SE181953	4.29	<1	<0.1	<1	<1	<1	**14**	**45**	<0.1
BH35	26-Jul-18	SE181953	6.04	3	<0.1	<1	<1	<1	**16**	**29**	<0.1
BH44	26-Jul-18	SE181953	6.06	4	<0.1	<1	**2**	<1	5	5	<0.1
Practical quantitation limit				1	0.1	1	1	1	1	5	0.1
Groundwater investigation levels											
GILs for Marine ecosystems [1]				13	0.7	4.4	1.3	4.4	7	15	0.1

Notes:
Concentration expressed in µg/L unless otherwise stated
[1] ANZECC/ARMCANZ (2000) *Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem,*
NL - non limiting
BOLD Concentration exceeding freshwater ecosystems investigation levels

Table F5 - Analytical groundwater results: VOC's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Depth to Water mBTOC	Dichlorodifluoromethane (CFC-12)	Chloromethane	Vinyl chloride (Chloroethene)	Bromomethane	Chloroethane	Trichlorofluoromethane	Acetone (2-propanone)	Iodomethane	1,1-dichloroethene	Acrylonitrile	Dichloromethane (Methylene chloride)	Allyl chloride	Carbon disulfide	trans-1,2-dichloroethene	MtBE (Methyl-tert-butyl ether)	1,1-dichloroethane	Vinyl acetate	MEK (2-butanone)	cis-1,2-dichloroethene	Bromochloromethane	Chloroform (THM)	2,2-dichloropropane	1,2-dichloroethane	1,1,1-trichloroethane	1,1-dichloropropene	Carbon tetrachloride	Dibromomethane	1,2-dichloropropane	Trichloroethene (Trichloroethylene,TCE)	2-nitropropane	Bromodichloromethane (THM)	MIBK (4-methyl-2-pentanone)	cis-1,3-dichloropropene
EXW01	26-Jul-18	SE181953	4.29	<5	<5	<0.3	<10	<5	<1	<10	<5	<0.5	<0.5	<5	<2	<2	<0.5	<2	<0.5	<10	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<0.5	<5	<0.5
BH35	26-Jul-18	SE181953	6.04	<5	<5	<0.3	<10	<5	<1	<10	<5	<0.5	<0.5	<5	<2	<2	<0.5	2	<0.5	<10	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<0.5	<5	<0.5
BH44	26-Jul-18	SE181953	6.06	<5	<5	<0.3	<10	<5	<1	<10	<5	<0.5	<0.5	<5	<2	<2	<0.5	<2	<0.5	<10	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<0.5	<5	<0.5
Practical quantitation limit				5	5	0.3	10	5	1	10	5	0.5	0.5	5	2	2	0.5	2	0.5	10	10	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	100	0.5	5	0.5
Groundwater investigation levels																																				
Protection of fresh water ecosystems [1]				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Concentration expressed in µg/L unless otherwise stated

[1] ANZECC/ARMCANZ (2000) *Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values*

NL - non limiting

BOLD Concentration exceeding freshwater ecosystem investigation levels

Table F5 - Analytical groundwater results: VOC's
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW

Sample ID	Date sampled	Laboratory report no.	Depth to Water mBTOC	trans-1,3-dichloropropene	1,1,2-trichloroethane	1,3-dichloropropane	Dibromochloromethane (THM)	2-hexanone (MBK)	1,2-dibromoethane (EDB)	Tetrachloroethene (Perchloroethylene,PCE)	1,1,1,2-tetrachloroethane	Chlorobenzene	Bromoform (THM)	cis-1,4-dichloro-2-butene	Styrene (Vinyl benzene)	1,1,2,2-tetrachloroethane	1,2,3-trichloropropane	trans-1,4-dichloro-2-butene	Isopropylbenzene (Cumene)	Bromobenzene	n-propylbenzene	2-chlorotoluene	4-chlorotoluene	1,3,5-trimethylbenzene	tert-butylbenzene	1,2,4-trimethylbenzene	sec-butylbenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	p-isopropyltoluene	1,2-dichlorobenzene	n-butylbenzene	1,2-dibromo-3-chloropropane	1,2,4-trichlorobenzene	Hexachlorobutadiene	1,2,3-trichlorobenzene	Total VOC
EXW01	26-Jul-18	SE181953	4.29	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH35	26-Jul-18	SE181953	6.04	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.6	<0.5	6.6	<0.5	<0.5	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	48
BH44	26-Jul-18	SE181953	6.06	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	0.7	<0.5	<0.5	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	14
Practical quantitation limit				0.5	0.5	0.5	0.5	5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
Groundwater investigation levels																																						
Protection of fresh water ecosystems [1]				-	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	60	-	160	-	-	20	-	3	-

Notes:
Concentration expressed in µg/L unless otherwise stated

[1] ANZECC/ARMCANZ (2000) *Fresh and Marine Water Quality Guidelines - trigger values for the protection of 95% freshwater ecosystem, including low reliability values*

NL - non limiting

BOLD Concentration exceeding freshwater ecosystem investigation levels

APPENDIX G

QA/QC RESULTS

Table G1: Summary results of QA/QC - Field duplicate

Detailed Site Investigation, Concord West

176-184 George St, Concord West, NSW

TRH and BTEXN

Sample ID	Date sampled	Laboratory report no.	C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	m- & p-Xylene	o-Xylene	Naphthalene
BH43_0.4	20-Jul-18	SE181914	<25	84	200	<120	<0.1	0.1	0.5	1.2	0.6	0.1
QA01	20-Jul-18	SE181914.044	<25	86	<90	<120	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1
RPD			-	**2%**	-	-	-	-	-	-	-	-
BH43_0.4	20-Jul-18	SE181914	<25	84	200	<120	<0.1	<0.1	<0.1	<0.2	<0.1	0.1
QA01A	20-Jul-18	ES1822132001	<10	200	290	150	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5
RPD			-	**82%**	**37%**	-	-	-	-	-	-	-

Notes:

Concentrations are in mg/kg

Table G2: Summary results of QA/QC - Field duplicate
Detailed Site Investigation, Concord West
176-184 George St, Concord West, NSW
PAH's

Sample ID	Date sampled	Laboratory report no.	Naphthalene	2-methylnaphthalene	1-methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b&j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a&h)anthracene	Benzo(ghi)perylene	BaP TEQ <LOR=0	Total PAHs
BH43_0.4	20-Jul-18	SE181914	0.1	0.3	0.2	<0.1	<0.1	<0.1	0.4	<0.1	0.4	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	2.4
QA01	20-Jul-18	SE181914.044	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.8
RPD			-	-	-	-	-	-	-	-	**67%**	**40%**		-	**0%**	-	-	-	-	-	-	-
BH43_0.4	20-Jul-18	SE181914	0.1	0.3	0.2	<0.1	<0.1	<0.1	0.4	<0.1	0.4	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	2.4
QA01A	20-Jul-18	ES1822132001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Concentrations are in mg/kg

Table G3: Summary results of QA/QC - Trip blank

Detailed Site Investigation, Concord West

176-184 George St, Concord West, NSW

Trip spike and Trip blank

Type of sample	Trip blank (mg/kg)	Trip spike (mg/kg)	Trip spike (ug/l)	Trip spike (ug/l)
Sample ID	TB	TS	TB	TS
Date sampled	20-Jul-18	20-Jul-18	26-Jul-18	26-Jul-18
Laboratory report no.	SE181914	SE181914	SE181953	SE181953
Total recoverable hydrocarbons				
F1: C6-C10 less BTEX	-	-	-	-
>C10-C16	-	-	-	-
F3: >C16-C34	-	-	-	-
F4: >C34-C40	-	-	-	-
C6-C9	-	-	-	-
C10-C14	-	-	-	-
C15-C28	-	-	-	-
C29-C36	-	-	-	-
Aromatic hydrocarbons				
Benzene	<0.1	[84%]	<0.5	[85%]
Toluene	<0.1	[86%]	<0.5	[117%]
Ethylbenzene	<0.1	[88%]	<0.5	[111%]
m- & p-Xylene	<0.2	[86%]	<1	[124%]
o-Xylene	<0.1	[87%]	<0.5	[118%]
Naphthalene	<0.1	-	<0.5	-

APPENDIX H

LABORATORY CERTIFICATES

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Clement Joyner
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, 680 George St NSW 2000
Telephone	02 9272 5472
Facsimile	02 9272 5101
Email	Clement.Joyner@wsp.com
Project	**PS109581**
Order Number	(Not specified)
Samples	46

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE181914 R0**
Date Received	25/7/2018
Date Reported	2/8/2018

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Sample 2 : asbestos found in approx 50x30x4mm cement sheet fragment.

Sample 19: asbestos found in approx 40x25x4mm cement sheet fragments.

Sample # 2: A portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

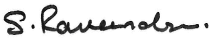
Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head



Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 27/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
Benzene	mg/kg	0.1	**0.2**	**0.3**	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	**0.3**	**0.3**	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	**0.4**	**0.3**	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	**0.7**	**0.6**	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

VOC's in Soil [AN433] Tested: 27/7/2018 (continued)

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.5**	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	**1.2**	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.6**	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	**1.8**	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	**2.3**	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043	QA01 SOIL - 20/7/2018 SE181914.044
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

VOC's in Soil [AN433] Tested: 27/7/2018 (continued)

PARAMETER	UOM	LOR	Trip Spike SOIL - 20/7/2018 SE181914.045	Trip Blank SOIL - 20/7/2018 SE181914.046
Benzene	mg/kg	0.1	[84%]	<0.1
Toluene	mg/kg	0.1	[86%]	<0.1
Ethylbenzene	mg/kg	0.1	[88%]	<0.1
m/p-xylene	mg/kg	0.2	[86%]	<0.2
o-xylene	mg/kg	0.1	[87%]	<0.1
Total Xylenes	mg/kg	0.3	-	<0.3
Total BTEX	mg/kg	0.6	-	<0.6
Naphthalene	mg/kg	0.1	-	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 27/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	**0.2**	**0.3**	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 27/7/2018 (continued)

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043	QA01 SOIL - 20/7/2018 SE181914.044
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**390**	<45	**110**	<45
TRH C29-C36	mg/kg	45	<45	**190**	<45	**97**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**540**	<90	**180**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	**580**	<110	**210**	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	**540**	<210	<210	<210

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	**24**
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	**66**
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	**29**
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	**29**
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	**45**
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	**210**
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	**64**
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	**64**
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	**230**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	**250**
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	**290**

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**82**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	**99**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**94**	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
TRH C10-C14	mg/kg	20	<20	<20	<20	**89**	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	**140**	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	**71**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	**84**	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	**84**	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	**200**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	**300**	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	**280**	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043	QA01 SOIL - 20/7/2018 SE181914.044
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	**120**
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	**86**
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	**86**
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	**120**
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	0.1	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	0.1	<0.1	0.5	<0.1
Acenaphthene	mg/kg	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
Phenanthrene	mg/kg	0.1	0.1	0.3	0.1	1.5	0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.4	<0.1
Fluoranthene	mg/kg	0.1	<0.1	0.6	<0.1	3.5	0.1
Pyrene	mg/kg	0.1	<0.1	0.5	<0.1	3.4	0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.3	<0.1	2.0	<0.1
Chrysene	mg/kg	0.1	<0.1	0.3	<0.1	1.8	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.4	<0.1	2.9	0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.2	<0.1	1.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	0.3	<0.1	2.5	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.2	<0.1	1.2	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.2	<0.1	0.9	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	0.4	<0.2	3.4	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	0.5	<0.3	3.4	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	0.4	<0.2	3.4	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	3.2	<0.8	22	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	3.2	<0.8	22	<0.8

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	0.2
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.6	0.6
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.4	0.4
Acenaphthylene	mg/kg	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
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	0.1
Phenanthrene	mg/kg	0.1	<0.1	0.2	0.2	0.4	0.8
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	0.1	<0.1	0.4	0.4	<0.1	0.5
Pyrene	mg/kg	0.1	<0.1	0.3	0.4	<0.1	0.6
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.1	0.2	<0.1	0.3
Chrysene	mg/kg	0.1	<0.1	0.1	0.2	<0.1	0.3
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.2	0.4	<0.1	0.3
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	0.1	0.3	<0.1	0.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	0.4	<0.2	0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	0.5	<0.3	0.4
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	0.2	0.4	<0.2	0.3
Total PAH (18)	mg/kg	0.8	<0.8	1.5	2.5	1.6	4.5
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	1.5	2.5	<0.8	3.5

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	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
Acenaphthene	mg/kg	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
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	1.4	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	1.4	<0.8

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.5
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.3
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.6
Acenaphthylene	mg/kg	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
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	0.4	<0.1	<0.1	0.4
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	0.6	<0.1	<0.1	0.5
Pyrene	mg/kg	0.1	<0.1	0.4	<0.1	<0.1	0.5
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	0.3
Chrysene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	0.3
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	0.3
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	0.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	0.2	<0.2	<0.2	0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	0.3	<0.3	<0.3	0.4
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	0.3	<0.2	<0.2	0.3
Total PAH (18)	mg/kg	0.8	<0.8	2.2	<0.8	<0.8	4.0
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	2.2	<0.8	<0.8	3.1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
Naphthalene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.9	0.1	<0.1	<0.1	0.2
Anthracene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	1.0	0.2	<0.1	<0.1	0.3
Pyrene	mg/kg	0.1	1.3	0.2	<0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.1	0.6	0.2	<0.1	<0.1	0.1
Chrysene	mg/kg	0.1	0.6	0.2	<0.1	<0.1	0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	0.7	0.3	<0.1	<0.1	0.1
Benzo(k)fluoranthene	mg/kg	0.1	0.4	0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	0.6	0.2	<0.1	<0.1	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	0.8	0.3	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	0.9	0.4	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	0.9	0.3	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	8.1	1.6	<0.8	<0.8	1.1
Total PAH (NEPM/WHO 16)	mg/kg	0.8	7.5	1.6	<0.8	<0.8	1.1

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.8	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	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
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.4	0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.4	0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3	0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	2.4	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	1.9	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	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
Acenaphthene	mg/kg	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
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.2**	<0.1	**0.1**	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.2**	<0.1	**0.1**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043	QA01 SOIL - 20/7/2018 SE181914.044
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	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
Acenaphthene	mg/kg	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
Phenanthrene	mg/kg	0.1	<0.1	**0.2**	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	**0.5**	<0.1	**0.2**	**0.2**
Pyrene	mg/kg	0.1	<0.1	**0.5**	<0.1	**0.2**	**0.2**
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.3**	<0.1	**0.1**	<0.1
Chrysene	mg/kg	0.1	<0.1	**0.3**	<0.1	**0.1**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**0.4**	<0.1	**0.2**	**0.1**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.2**	<0.1	**0.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**0.3**	<0.1	**0.2**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	**0.2**	<0.1	**0.1**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.1**	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	**0.4**	<0.2	**0.3**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	**0.5**	<0.3	**0.4**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	**0.5**	<0.2	**0.3**	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	**2.9**	<0.8	**1.4**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	**2.9**	<0.8	**1.4**	<0.8

OC Pesticides in Soil [AN420] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH34_4.0 SOIL - 20/7/2018 SE181914.009
Hexachlorobenzene (HCB)	mg/kg	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
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	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
Beta BHC	mg/kg	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
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	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
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	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
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Hexachlorobenzene (HCB)	mg/kg	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
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	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
Beta BHC	mg/kg	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
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	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
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Endosulfan sulphate	mg/kg	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
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH41_3.0 SOIL - 20/7/2018 SE181914.028	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH43_3.0 SOIL - 20/7/2018 SE181914.034	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036
Hexachlorobenzene (HCB)	mg/kg	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
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	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
Beta BHC	mg/kg	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
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	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
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	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
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH46_0.5 SOIL - 20/7/2018 SE181914.039	BH47_0.1 SOIL - 20/7/2018 SE181914.041
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1

SVCH (incl. chlorinated benzenes and naphthalenes) in soil [AN420] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH34_4.0 SOIL - 20/7/2018 SE181914.009
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloropropene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	<1	<1	<1	<1
Hexachlorocyclopentadiene	mg/kg	1	<1	<1	<1	<1	<1
1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1/2-Chloronaphthalene	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachloronitrobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloropropene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	<1	<1	<1	<1
Hexachlorocyclopentadiene	mg/kg	1	<1	<1	<1	<1	<1
1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1/2-Chloronaphthalene	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachloronitrobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

SVCH (incl. chlorinated benzenes and naphthalenes) in soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH41_3.0 SOIL - 20/7/2018 SE181914.028	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH43_3.0 SOIL - 20/7/2018 SE181914.034	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloropropene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	<1	<1	<1	<1
Hexachlorocyclopentadiene	mg/kg	1	<1	<1	<1	<1	<1
1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1/2-Chloronaphthalene	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachloronitrobenzene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	UOM	LOR	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH46_0.5 SOIL - 20/7/2018 SE181914.039	BH47_0.1 SOIL - 20/7/2018 SE181914.041
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
1,2-dichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
Hexachloropropene	mg/kg	0.5	<0.5	<0.5	<0.5
1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	<1	<1
Hexachlorocyclopentadiene	mg/kg	1	<1	<1	<1
1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
1/2-Chloronaphthalene	mg/kg	1	<1	<1	<1
Pentachlorobenzene	mg/kg	0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Pentachloronitrobenzene	mg/kg	0.5	<0.5	<0.5	<0.5

PCBs in Soil [AN420] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH34_4.0 SOIL - 20/7/2018 SE181914.009
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	**0.3**	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH41_3.0 SOIL - 20/7/2018 SE181914.028	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH43_3.0 SOIL - 20/7/2018 SE181914.034	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PCBs in Soil [AN420] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH46_0.5 SOIL - 20/7/2018 SE181914.039	BH47_0.1 SOIL - 20/7/2018 SE181914.041
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
Arsenic, As	mg/kg	1	1	15	3	2	6
Cadmium, Cd	mg/kg	0.3	<0.3	11	<0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	100	42	58	9.9	36
Copper, Cu	mg/kg	0.5	47	260	48	810	48
Lead, Pb	mg/kg	1	15	160	19	190	33
Nickel, Ni	mg/kg	0.5	100	16	63	11	44
Zinc, Zn	mg/kg	2	84	480	60	110	80

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
Arsenic, As	mg/kg	1	5	8	8	8	7
Cadmium, Cd	mg/kg	0.3	<0.3	0.3	0.3	0.6	0.5
Chromium, Cr	mg/kg	0.3	60	25	31	8.0	7.8
Copper, Cu	mg/kg	0.5	29	510	280	28	38
Lead, Pb	mg/kg	1	12	37	39	18	18
Nickel, Ni	mg/kg	0.5	75	14	20	34	37
Zinc, Zn	mg/kg	2	55	150	110	150	160

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
Arsenic, As	mg/kg	1	5	3	6	5	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	8.5	12	13	8.4	8.4
Copper, Cu	mg/kg	0.5	19	22	19	15	32
Lead, Pb	mg/kg	1	16	26	22	18	42
Nickel, Ni	mg/kg	0.5	0.6	1.6	2.0	0.6	5.3
Zinc, Zn	mg/kg	2	14	11	11	6.0	32

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Arsenic, As	mg/kg	1	2	8	5	13	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	2.1	6.1	15	7.2	8.6
Copper, Cu	mg/kg	0.5	9.5	25	13	8.9	26
Lead, Pb	mg/kg	1	16	40	25	9	68
Nickel, Ni	mg/kg	0.5	0.8	12	1.9	1.3	9.7
Zinc, Zn	mg/kg	2	5.7	66	8.7	18	38

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 30/7/2018

(continued)

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
Arsenic, As	mg/kg	1	4	3	5	3	14
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	12	5.8	15	4.7	24
Copper, Cu	mg/kg	0.5	28	22	12	16	370
Lead, Pb	mg/kg	1	32	45	20	18	22
Nickel, Ni	mg/kg	0.5	5.4	11	2.0	1.6	3.2
Zinc, Zn	mg/kg	2	34	43	8.0	6.6	210

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
Arsenic, As	mg/kg	1	3	4	11	6	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.5	1.1
Chromium, Cr	mg/kg	0.3	7.3	20	1.3	11	13
Copper, Cu	mg/kg	0.5	18	14	19	37	4600
Lead, Pb	mg/kg	1	16	21	24	220	490
Nickel, Ni	mg/kg	0.5	5.1	2.6	2.9	16	18
Zinc, Zn	mg/kg	2	17	8.8	8.2	170	3300

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
Arsenic, As	mg/kg	1	4	6	3	24	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	8.5	11	4.7	25	22
Copper, Cu	mg/kg	0.5	78	18	24	22	9.5
Lead, Pb	mg/kg	1	31	24	20	15	18
Nickel, Ni	mg/kg	0.5	8.5	1.1	2.9	2.6	6.7
Zinc, Zn	mg/kg	2	65	12	25	25	13

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043
Arsenic, As	mg/kg	1	5	6	4	15
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.5
Chromium, Cr	mg/kg	0.3	19	14	18	28
Copper, Cu	mg/kg	0.5	9.7	29	7.3	63
Lead, Pb	mg/kg	1	19	49	100	54
Nickel, Ni	mg/kg	0.5	8.6	6.3	4.8	6.9
Zinc, Zn	mg/kg	2	23	48	9.1	81

Mercury in Soil [AN312] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
Mercury	mg/kg	0.05	<0.05	**3.4**	<0.05	**0.15**	<0.05

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
Mercury	mg/kg	0.05	<0.05	<0.05	**0.11**	<0.05	<0.05

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	**0.17**

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	**0.13**

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
Mercury	mg/kg	0.05	**0.07**	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043
Mercury	mg/kg	0.05	<0.05	**0.08**	<0.05	<0.05

Moisture Content [AN002] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH30_0.4-0.5 SOIL - 19/7/2018 SE181914.001	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_0.2 SOIL - 19/7/2018 SE181914.003	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.2 SOIL - 19/7/2018 SE181914.005
% Moisture	%w/w	0.5	4.5	4.7	9.6	14	8.7

PARAMETER	UOM	LOR	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH33_1.0 SOIL - 19/7/2018 SE181914.008	BH34_4.0 SOIL - 20/7/2018 SE181914.009	BH34_5.0 SOIL - 20/7/2018 SE181914.010
% Moisture	%w/w	0.5	5.2	17	17	11	9.1

PARAMETER	UOM	LOR	BH35_0.9-1.0 SOIL - 20/7/2018 SE181914.011	BH35_2.0 SOIL - 20/7/2018 SE181914.012	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH36_1.0 SOIL - 20/7/2018 SE181914.014	BH37_0.3 SOIL - 20/7/2018 SE181914.015
% Moisture	%w/w	0.5	18	24	21	21	16

PARAMETER	UOM	LOR	BH37_2.0 SOIL - 20/7/2018 SE181914.017	BH38_0.3 SOIL - 20/7/2018 SE181914.018	BH38_1.0 SOIL - 20/7/2018 SE181914.020	BH38_3.0 SOIL - 20/7/2018 SE181914.021	BH39_0.3 SOIL - 20/7/2018 SE181914.022
% Moisture	%w/w	0.5	20	15	19	14	11

PARAMETER	UOM	LOR	BH39_1.0 SOIL - 20/7/2018 SE181914.023	BH40_0.3 SOIL - 20/7/2018 SE181914.024	BH40_1.0 SOIL - 20/7/2018 SE181914.026	BH41_0.5 SOIL - 20/7/2018 SE181914.027	BH41_3.0 SOIL - 20/7/2018 SE181914.028
% Moisture	%w/w	0.5	11	8.0	21	9.4	23

PARAMETER	UOM	LOR	BH42_0.3 SOIL - 20/7/2018 SE181914.029	BH42_2.0 SOIL - 20/7/2018 SE181914.031	BH42_4.0 SOIL - 20/7/2018 SE181914.032	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH43_3.0 SOIL - 20/7/2018 SE181914.034
% Moisture	%w/w	0.5	9.8	25	14	9.5	7.8

PARAMETER	UOM	LOR	BH44_0.32-0.42 SOIL - 19/7/2018 SE181914.035	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037	BH45_3.0 SOIL - 20/7/2018 SE181914.038	BH46_0.5 SOIL - 20/7/2018 SE181914.039
% Moisture	%w/w	0.5	10	14	12	18	22

Moisture Content [AN002] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH46_1.0 SOIL - 20/7/2018 SE181914.040	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH47_0.5 SOIL - 20/7/2018 SE181914.042	BH48_0.3 SOIL - 20/7/2018 SE181914.043	QA01 SOIL - 20/7/2018 SE181914.044
% Moisture	%w/w	0.5	21	9.6	15	16	8.6

PARAMETER	UOM	LOR	Trip Blank SOIL - 20/7/2018 SE181914.046
% Moisture	%w/w	0.5	<0.5

Fibre Identification in soil [AN602] Tested: 31/7/2018

PARAMETER	UOM	LOR	BH30_0.9-1.0 SOIL - 19/7/2018 SE181914.002	BH31_2.0 SOIL - 19/7/2018 SE181914.004	BH32_0.5 SOIL - 19/7/2018 SE181914.006	BH33_0.5 SOIL - 19/7/2018 SE181914.007	BH34_4.0 SOIL - 20/7/2018 SE181914.009
Asbestos Detected	No unit	-	Yes	No	No	No	No

PARAMETER	UOM	LOR	BH36_0.5 SOIL - 20/7/2018 SE181914.013	BH37_0.5 SOIL - 20/7/2018 SE181914.016	BH38_0.5 SOIL - 20/7/2018 SE181914.019	BH39_0.3 SOIL - 20/7/2018 SE181914.022	BH40_0.5 SOIL - 20/7/2018 SE181914.025
Asbestos Detected	No unit	-	No	No	Yes	No	No

PARAMETER	UOM	LOR	BH41_3.0 SOIL - 20/7/2018 SE181914.028	BH42_0.5 SOIL - 20/7/2018 SE181914.030	BH43_0.4 SOIL - 20/7/2018 SE181914.033	BH44_1.0-1.1 SOIL - 19/7/2018 SE181914.036	BH45_0.5 SOIL - 20/7/2018 SE181914.037
Asbestos Detected	No unit	-	No	No	No	No	No

PARAMETER	UOM	LOR	BH46_0.5 SOIL - 20/7/2018 SE181914.039	BH47_0.1 SOIL - 20/7/2018 SE181914.041	BH48_0.3 SOIL - 20/7/2018 SE181914.043
Asbestos Detected	No unit	-	No	No	No

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**PS109581**
Order Number	(Not specified)
Samples	18

LABORATORY DETAILS

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SGS Reference	**SE181914 R0**
Date Received	25 Jul 2018
Date Reported	02 Aug 2018

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Sample 2 : asbestos found in approx 50x30x4mm cement sheet fragment.

Sample 19: asbestos found in approx 40x25x4mm cement sheet fragments.

Sample # 2: A portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE181914.002	BH30_0.9-1.0	Soil	253g Sand,Soil,Rocks	19 Jul 2018	Amosite & Chrysotile Asbestos Found Organic Fibres Detected	
SE181914.004	BH31_2.0	Soil	293g Clay,Soil,Rocks	19 Jul 2018	No Asbestos Found	
SE181914.006	BH32_0.5	Soil	388g Clay,Soil,Rocks	19 Jul 2018	No Asbestos Found	
SE181914.007	BH33_0.5	Soil	410g Clay,Soil,Rocks, Bitumen	19 Jul 2018	No Asbestos Found	
SE181914.009	BH34_4.0	Soil	377g Sand,Soil,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.013	BH36_0.5	Soil	265g Clay,Sand	20 Jul 2018	No Asbestos Found	
SE181914.016	BH37_0.5	Soil	313g Clay,Sand	20 Jul 2018	No Asbestos Found	
SE181914.019	BH38_0.5	Soil	275g Clay,Sand,Rocks	20 Jul 2018	Chrysotile Asbestos Found	
SE181914.022	BH39_0.3	Soil	296g Clay,Sand,Soil, Rocks,Bitumen	20 Jul 2018	No Asbestos Found	
SE181914.025	BH40_0.5	Soil	236g Clay,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.028	BH41_3.0	Soil	236g Clay,Soil,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.030	BH42_0.5	Soil	386g Clay,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.033	BH43_0.4	Soil	257g Clay,Soil,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.036	BH44_1.0-1.1	Soil	453g Clay,Rocks	19 Jul 2018	No Asbestos Found	
SE181914.037	BH45_0.5	Soil	347g Clay	20 Jul 2018	No Asbestos Found	
SE181914.039	BH46_0.5	Soil	251g Soil	20 Jul 2018	No Asbestos Found	
SE181914.041	BH47_0.1	Soil	252g Soil,Rocks	20 Jul 2018	No Asbestos Found	
SE181914.043	BH48_0.3	Soil	216g Clay,Sand,Soil, Rocks	20 Jul 2018	No Asbestos Found	

METHOD SUMMARY

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METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE181914 R0

CLIENT DETAILS

Contact	Clement Joyner
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, 680 George St NSW 2000
Telephone	02 9272 5472
Facsimile	02 9272 5101
Email	Clement.Joyner@wsp.com
Project	**PS109581**
Order Number	(Not specified)
Samples	46

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE181914 R0**
Date Received	25 Jul 2018
Date Reported	02 Aug 2018

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items
	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	46 Soil
Date documentation received	25/7/18@3:27pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	5.4°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

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SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.9-1.0	SE181914.002	LB153111	19 Jul 2018	25 Jul 2018	19 Jul 2019	31 Jul 2018	19 Jul 2019	01 Aug 2018
BH31_2.0	SE181914.004	LB153111	19 Jul 2018	25 Jul 2018	19 Jul 2019	31 Jul 2018	19 Jul 2019	01 Aug 2018
BH32_0.5	SE181914.006	LB153111	19 Jul 2018	25 Jul 2018	19 Jul 2019	31 Jul 2018	19 Jul 2019	01 Aug 2018
BH33_0.5	SE181914.007	LB153111	19 Jul 2018	25 Jul 2018	19 Jul 2019	31 Jul 2018	19 Jul 2019	01 Aug 2018
BH34_4.0	SE181914.009	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH36_0.5	SE181914.013	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH37_0.5	SE181914.016	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH38_0.5	SE181914.019	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH39_0.3	SE181914.022	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH40_0.5	SE181914.025	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH41_3.0	SE181914.028	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH42_0.5	SE181914.030	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH43_0.4	SE181914.033	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB153111	19 Jul 2018	25 Jul 2018	19 Jul 2019	31 Jul 2018	19 Jul 2019	01 Aug 2018
BH45_0.5	SE181914.037	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH46_0.5	SE181914.039	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH47_0.1	SE181914.041	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018
BH48_0.3	SE181914.043	LB153111	20 Jul 2018	25 Jul 2018	20 Jul 2019	31 Jul 2018	20 Jul 2019	01 Aug 2018

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH30_0.9-1.0	SE181914.002	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH31_0.2	SE181914.003	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH31_2.0	SE181914.004	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH32_0.2	SE181914.005	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH32_0.5	SE181914.006	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH33_0.5	SE181914.007	LB153039	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH33_1.0	SE181914.008	LB153040	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH34_4.0	SE181914.009	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH34_5.0	SE181914.010	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH35_2.0	SE181914.012	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH36_0.5	SE181914.013	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH36_1.0	SE181914.014	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH37_0.3	SE181914.015	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH37_2.0	SE181914.017	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH38_0.3	SE181914.018	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH38_1.0	SE181914.020	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH38_3.0	SE181914.021	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH39_0.3	SE181914.022	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH39_1.0	SE181914.023	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH40_0.3	SE181914.024	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH40_1.0	SE181914.026	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH41_0.5	SE181914.027	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH41_3.0	SE181914.028	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH42_0.3	SE181914.029	LB153040	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH42_2.0	SE181914.031	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH42_4.0	SE181914.032	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH43_0.4	SE181914.033	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH43_3.0	SE181914.034	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH44_0.32-0.42	SE181914.035	LB153041	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB153041	19 Jul 2018	25 Jul 2018	16 Aug 2018	30 Jul 2018	16 Aug 2018	01 Aug 2018
BH45_0.5	SE181914.037	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH45_3.0	SE181914.038	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH46_0.5	SE181914.039	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH46_1.0	SE181914.040	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH47_0.1	SE181914.041	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH47_0.5	SE181914.042	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018
BH48_0.3	SE181914.043	LB153041	20 Jul 2018	25 Jul 2018	17 Aug 2018	30 Jul 2018	17 Aug 2018	01 Aug 2018

HOLDING TIME SUMMARY

SE181914 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH30_0.9-1.0	SE181914.002	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH31_0.2	SE181914.003	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH31_2.0	SE181914.004	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH32_0.2	SE181914.005	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH32_0.5	SE181914.006	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH33_0.5	SE181914.007	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH33_1.0	SE181914.008	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH34_4.0	SE181914.009	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH34_5.0	SE181914.010	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH35_2.0	SE181914.012	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH36_0.5	SE181914.013	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH36_1.0	SE181914.014	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH37_0.3	SE181914.015	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH37_2.0	SE181914.017	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH38_0.3	SE181914.018	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH38_1.0	SE181914.020	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH38_3.0	SE181914.021	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH39_0.3	SE181914.022	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH39_1.0	SE181914.023	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH40_0.3	SE181914.024	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH40_1.0	SE181914.026	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH41_0.5	SE181914.027	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH41_3.0	SE181914.028	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH42_0.3	SE181914.029	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH42_2.0	SE181914.031	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH42_4.0	SE181914.032	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH43_0.4	SE181914.033	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH43_3.0	SE181914.034	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH44_0.32-0.42	SE181914.035	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB153046	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH45_0.5	SE181914.037	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH45_3.0	SE181914.038	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH46_0.5	SE181914.039	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH46_1.0	SE181914.040	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH47_0.1	SE181914.041	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH47_0.5	SE181914.042	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
BH48_0.3	SE181914.043	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
QA01	SE181914.044	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018
Trip Blank	SE181914.046	LB153046	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	04 Aug 2018	01 Aug 2018

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH30_0.9-1.0	SE181914.002	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_0.2	SE181914.003	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_2.0	SE181914.004	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.2	SE181914.005	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.5	SE181914.006	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_0.5	SE181914.007	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_1.0	SE181914.008	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_4.0	SE181914.009	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_5.0	SE181914.010	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_2.0	SE181914.012	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_0.5	SE181914.013	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_1.0	SE181914.014	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_0.3	SE181914.015	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_2.0	SE181914.017	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH38_0.3	SE181914.018	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_1.0	SE181914.020	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_3.0	SE181914.021	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_0.3	SE181914.022	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_1.0	SE181914.023	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_0.3	SE181914.024	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_1.0	SE181914.026	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_0.5	SE181914.027	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_3.0	SE181914.028	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_0.3	SE181914.029	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_2.0	SE181914.031	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_4.0	SE181914.032	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_0.4	SE181914.033	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_3.0	SE181914.034	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_0.5	SE181914.037	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_3.0	SE181914.038	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_0.5	SE181914.039	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_1.0	SE181914.040	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.1	SE181914.041	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.5	SE181914.042	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH48_0.3	SE181914.043	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
QA01	SE181914.044	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH30_0.9-1.0	SE181914.002	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_0.2	SE181914.003	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_2.0	SE181914.004	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.2	SE181914.005	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.5	SE181914.006	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_0.5	SE181914.007	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_1.0	SE181914.008	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_4.0	SE181914.009	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_5.0	SE181914.010	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_2.0	SE181914.012	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_0.5	SE181914.013	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_1.0	SE181914.014	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_0.3	SE181914.015	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_2.0	SE181914.017	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_0.3	SE181914.018	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_1.0	SE181914.020	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_3.0	SE181914.021	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_0.3	SE181914.022	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_1.0	SE181914.023	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_0.3	SE181914.024	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_1.0	SE181914.026	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_0.5	SE181914.027	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_3.0	SE181914.028	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_0.3	SE181914.029	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_2.0	SE181914.031	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_4.0	SE181914.032	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_0.4	SE181914.033	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_3.0	SE181914.034	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_0.5	SE181914.037	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH45_3.0	SE181914.038	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_0.5	SE181914.039	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_1.0	SE181914.040	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.1	SE181914.041	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.5	SE181914.042	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH48_0.3	SE181914.043	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
QA01	SE181914.044	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH30_0.9-1.0	SE181914.002	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_0.2	SE181914.003	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_2.0	SE181914.004	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.2	SE181914.005	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.5	SE181914.006	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_0.5	SE181914.007	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_1.0	SE181914.008	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_4.0	SE181914.009	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_5.0	SE181914.010	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_2.0	SE181914.012	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_0.5	SE181914.013	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_1.0	SE181914.014	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_0.3	SE181914.015	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_2.0	SE181914.017	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_0.3	SE181914.018	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_1.0	SE181914.020	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_3.0	SE181914.021	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_0.3	SE181914.022	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_1.0	SE181914.023	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_0.3	SE181914.024	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_1.0	SE181914.026	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_0.5	SE181914.027	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_3.0	SE181914.028	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_0.3	SE181914.029	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_2.0	SE181914.031	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_4.0	SE181914.032	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_0.4	SE181914.033	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_3.0	SE181914.034	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_0.5	SE181914.037	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_3.0	SE181914.038	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_0.5	SE181914.039	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_1.0	SE181914.040	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.1	SE181914.041	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.5	SE181914.042	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH48_0.3	SE181914.043	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
QA01	SE181914.044	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

SVCH (incl. chlorinated benzenes and naphthalenes) in soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH30_0.9-1.0	SE181914.002	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_0.2	SE181914.003	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH31_2.0	SE181914.004	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.2	SE181914.005	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH32_0.5	SE181914.006	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_0.5	SE181914.007	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH33_1.0	SE181914.008	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

SVCH (incl. chlorinated benzenes and naphthalenes) in soil (continued) — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH34_4.0	SE181914.009	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH34_5.0	SE181914.010	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH35_2.0	SE181914.012	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_0.5	SE181914.013	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH36_1.0	SE181914.014	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_0.3	SE181914.015	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH37_2.0	SE181914.017	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_0.3	SE181914.018	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_1.0	SE181914.020	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH38_3.0	SE181914.021	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_0.3	SE181914.022	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_1.0	SE181914.023	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_0.3	SE181914.024	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_1.0	SE181914.026	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_0.5	SE181914.027	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_3.0	SE181914.028	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_0.3	SE181914.029	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_2.0	SE181914.031	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_4.0	SE181914.032	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_0.4	SE181914.033	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_3.0	SE181914.034	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_0.5	SE181914.037	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_3.0	SE181914.038	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_0.5	SE181914.039	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_1.0	SE181914.040	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.1	SE181914.041	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.5	SE181914.042	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH48_0.3	SE181914.043	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
QA01	SE181914.044	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB153062	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH30_0.9-1.0	SE181914.002	LB153062	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH31_0.2	SE181914.003	LB153062	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH31_2.0	SE181914.004	LB153062	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH32_0.2	SE181914.005	LB153063	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH32_0.5	SE181914.006	LB153063	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH33_0.5	SE181914.007	LB153063	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH33_1.0	SE181914.008	LB153063	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH34_4.0	SE181914.009	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH34_5.0	SE181914.010	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH35_2.0	SE181914.012	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH36_0.5	SE181914.013	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH36_1.0	SE181914.014	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH37_0.3	SE181914.015	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH37_2.0	SE181914.017	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH38_0.3	SE181914.018	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH38_1.0	SE181914.020	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH38_3.0	SE181914.021	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH39_0.3	SE181914.022	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH39_1.0	SE181914.023	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH40_0.3	SE181914.024	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH40_1.0	SE181914.026	LB153063	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH41_0.5	SE181914.027	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH41_3.0	SE181914.028	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018

HOLDING TIME SUMMARY

SE181914 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH42_0.3	SE181914.029	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH42_2.0	SE181914.031	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH42_4.0	SE181914.032	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH43_0.4	SE181914.033	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH43_3.0	SE181914.034	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH44_0.32-0.42	SE181914.035	LB153064	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB153064	19 Jul 2018	25 Jul 2018	15 Jan 2019	30 Jul 2018	15 Jan 2019	01 Aug 2018
BH45_0.5	SE181914.037	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH45_3.0	SE181914.038	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH46_0.5	SE181914.039	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH46_1.0	SE181914.040	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH47_0.1	SE181914.041	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH47_0.5	SE181914.042	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018
BH48_0.3	SE181914.043	LB153064	20 Jul 2018	25 Jul 2018	16 Jan 2019	30 Jul 2018	16 Jan 2019	01 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH30_0.9-1.0	SE181914.002	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH31_0.2	SE181914.003	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH31_2.0	SE181914.004	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH32_0.2	SE181914.005	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH32_0.5	SE181914.006	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH33_0.5	SE181914.007	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH33_1.0	SE181914.008	LB152985	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH34_4.0	SE181914.009	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH34_5.0	SE181914.010	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH35_2.0	SE181914.012	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH36_0.5	SE181914.013	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH36_1.0	SE181914.014	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH37_0.3	SE181914.015	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH37_2.0	SE181914.017	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH38_0.3	SE181914.018	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH38_1.0	SE181914.020	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH38_3.0	SE181914.021	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	01 Aug 2018
BH39_0.3	SE181914.022	LB152985	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH39_1.0	SE181914.023	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_0.3	SE181914.024	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH40_1.0	SE181914.026	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_0.5	SE181914.027	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH41_3.0	SE181914.028	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_0.3	SE181914.029	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_2.0	SE181914.031	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH42_4.0	SE181914.032	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_0.4	SE181914.033	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH43_3.0	SE181914.034	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152988	19 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_0.5	SE181914.037	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH45_3.0	SE181914.038	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_0.5	SE181914.039	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH46_1.0	SE181914.040	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.1	SE181914.041	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH47_0.5	SE181914.042	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
BH48_0.3	SE181914.043	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018
QA01	SE181914.044	LB152988	20 Jul 2018	25 Jul 2018	03 Aug 2018	30 Jul 2018	08 Sep 2018	02 Aug 2018

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE181914 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH30_0.9-1.0	SE181914.002	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH31_0.2	SE181914.003	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH31_2.0	SE181914.004	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH32_0.2	SE181914.005	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH32_0.5	SE181914.006	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH33_0.5	SE181914.007	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH33_1.0	SE181914.008	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH34_4.0	SE181914.009	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH34_5.0	SE181914.010	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH35_2.0	SE181914.012	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH36_0.5	SE181914.013	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH36_1.0	SE181914.014	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH37_0.3	SE181914.015	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH37_2.0	SE181914.017	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_0.3	SE181914.018	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_1.0	SE181914.020	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_3.0	SE181914.021	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH39_0.3	SE181914.022	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH39_1.0	SE181914.023	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH40_0.3	SE181914.024	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH40_1.0	SE181914.026	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH41_0.5	SE181914.027	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH41_3.0	SE181914.028	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_0.3	SE181914.029	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_2.0	SE181914.031	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_4.0	SE181914.032	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH43_0.4	SE181914.033	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH43_3.0	SE181914.034	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152938	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152938	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH45_0.5	SE181914.037	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH45_3.0	SE181914.038	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH46_0.5	SE181914.039	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH46_1.0	SE181914.040	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH47_0.1	SE181914.041	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH47_0.5	SE181914.042	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH48_0.3	SE181914.043	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
QA01	SE181914.044	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
Trip Spike	SE181914.045	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
Trip Blank	SE181914.046	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH30_0.4-0.5	SE181914.001	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH30_0.9-1.0	SE181914.002	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH31_0.2	SE181914.003	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH31_2.0	SE181914.004	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH32_0.2	SE181914.005	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH32_0.5	SE181914.006	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH33_0.5	SE181914.007	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH33_1.0	SE181914.008	LB152937	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH34_4.0	SE181914.009	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH34_5.0	SE181914.010	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH35_0.9-1.0	SE181914.011	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH35_2.0	SE181914.012	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH36_0.5	SE181914.013	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH36_1.0	SE181914.014	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH37_0.3	SE181914.015	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Volatile Petroleum Hydrocarbons in Soil (continued) **Method: ME-(AU)-[ENV]AN433**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH37_2.0	SE181914.017	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_0.3	SE181914.018	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_1.0	SE181914.020	LB152937	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH38_3.0	SE181914.021	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH39_0.3	SE181914.022	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH39_1.0	SE181914.023	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH40_0.3	SE181914.024	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH40_1.0	SE181914.026	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH41_0.5	SE181914.027	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH41_3.0	SE181914.028	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_0.3	SE181914.029	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_2.0	SE181914.031	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH42_4.0	SE181914.032	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH43_0.4	SE181914.033	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH43_3.0	SE181914.034	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH44_0.32-0.42	SE181914.035	LB152938	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH44_1.0-1.1	SE181914.036	LB152938	19 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH45_0.5	SE181914.037	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH45_3.0	SE181914.038	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH46_0.5	SE181914.039	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH46_1.0	SE181914.040	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH47_0.1	SE181914.041	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH47_0.5	SE181914.042	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
BH48_0.3	SE181914.043	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
QA01	SE181914.044	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
Trip Spike	SE181914.045	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018
Trip Blank	SE181914.046	LB152938	20 Jul 2018	25 Jul 2018	03 Aug 2018	27 Jul 2018	05 Sep 2018	01 Aug 2018

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH30_0.9-1.0	SE181914.002	%	60 - 130%	91
	BH31_2.0	SE181914.004	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	89
	BH33_0.5	SE181914.007	%	60 - 130%	91
	BH34_4.0	SE181914.009	%	60 - 130%	97
	BH35_2.0	SE181914.012	%	60 - 130%	104
	BH36_1.0	SE181914.014	%	60 - 130%	94
	BH37_0.3	SE181914.015	%	60 - 130%	99
	BH38_1.0	SE181914.020	%	60 - 130%	94
	BH39_0.3	SE181914.022	%	60 - 130%	91
	BH40_0.3	SE181914.024	%	60 - 130%	93
	BH41_3.0	SE181914.028	%	60 - 130%	103
	BH42_0.3	SE181914.029	%	60 - 130%	97
	BH43_3.0	SE181914.034	%	60 - 130%	95
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	100
	BH45_0.5	SE181914.037	%	60 - 130%	97
	BH46_0.5	SE181914.039	%	60 - 130%	103
	BH47_0.1	SE181914.041	%	60 - 130%	105

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH30_0.4-0.5	SE181914.001	%	70 - 130%	84
	BH30_0.9-1.0	SE181914.002	%	70 - 130%	84
	BH31_0.2	SE181914.003	%	70 - 130%	82
	BH31_2.0	SE181914.004	%	70 - 130%	82
	BH32_0.2	SE181914.005	%	70 - 130%	84
	BH32_0.5	SE181914.006	%	70 - 130%	82
	BH33_0.5	SE181914.007	%	70 - 130%	86
	BH33_1.0	SE181914.008	%	70 - 130%	86
	BH34_4.0	SE181914.009	%	70 - 130%	84
	BH34_5.0	SE181914.010	%	70 - 130%	82
	BH35_0.9-1.0	SE181914.011	%	70 - 130%	82
	BH35_2.0	SE181914.012	%	70 - 130%	82
	BH36_0.5	SE181914.013	%	70 - 130%	84
	BH36_1.0	SE181914.014	%	70 - 130%	86
	BH37_0.3	SE181914.015	%	70 - 130%	86
	BH37_2.0	SE181914.017	%	70 - 130%	80
	BH38_0.3	SE181914.018	%	70 - 130%	84
	BH38_1.0	SE181914.020	%	70 - 130%	82
	BH38_3.0	SE181914.021	%	70 - 130%	78
	BH39_0.3	SE181914.022	%	70 - 130%	88
	BH39_1.0	SE181914.023	%	70 - 130%	86
	BH40_0.3	SE181914.024	%	70 - 130%	78
	BH40_1.0	SE181914.026	%	70 - 130%	78
	BH41_0.5	SE181914.027	%	70 - 130%	80
	BH41_3.0	SE181914.028	%	70 - 130%	86
	BH42_0.3	SE181914.029	%	70 - 130%	86
	BH42_2.0	SE181914.031	%	70 - 130%	86
	BH42_4.0	SE181914.032	%	70 - 130%	82
	BH43_0.4	SE181914.033	%	70 - 130%	86
	BH43_3.0	SE181914.034	%	70 - 130%	84
	BH44_0.32-0.42	SE181914.035	%	70 - 130%	84
	BH44_1.0-1.1	SE181914.036	%	70 - 130%	84
	BH45_0.5	SE181914.037	%	70 - 130%	86
	BH45_3.0	SE181914.038	%	70 - 130%	82
	BH46_0.5	SE181914.039	%	70 - 130%	86
	BH46_1.0	SE181914.040	%	70 - 130%	78
	BH47_0.1	SE181914.041	%	70 - 130%	78
	BH47_0.5	SE181914.042	%	70 - 130%	84
	BH48_0.3	SE181914.043	%	70 - 130%	80
	QA01	SE181914.044	%	70 - 130%	94

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) — **Method: ME-(AU)-[ENV]AN420**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	BH30_0.4-0.5	SE181914.001	%	70 - 130%	90
	BH30_0.9-1.0	SE181914.002	%	70 - 130%	90
	BH31_0.2	SE181914.003	%	70 - 130%	92
	BH31_2.0	SE181914.004	%	70 - 130%	92
	BH32_0.2	SE181914.005	%	70 - 130%	90
	BH32_0.5	SE181914.006	%	70 - 130%	90
	BH33_0.5	SE181914.007	%	70 - 130%	92
	BH33_1.0	SE181914.008	%	70 - 130%	94
	BH34_4.0	SE181914.009	%	70 - 130%	90
	BH34_5.0	SE181914.010	%	70 - 130%	90
	BH35_0.9-1.0	SE181914.011	%	70 - 130%	94
	BH35_2.0	SE181914.012	%	70 - 130%	92
	BH36_0.5	SE181914.013	%	70 - 130%	90
	BH36_1.0	SE181914.014	%	70 - 130%	88
	BH37_0.3	SE181914.015	%	70 - 130%	90
	BH37_2.0	SE181914.017	%	70 - 130%	90
	BH38_0.3	SE181914.018	%	70 - 130%	86
	BH38_1.0	SE181914.020	%	70 - 130%	92
	BH38_3.0	SE181914.021	%	70 - 130%	88
	BH39_0.3	SE181914.022	%	70 - 130%	92
	BH39_1.0	SE181914.023	%	70 - 130%	88
	BH40_0.3	SE181914.024	%	70 - 130%	80
	BH40_1.0	SE181914.026	%	70 - 130%	90
	BH41_0.5	SE181914.027	%	70 - 130%	88
	BH41_3.0	SE181914.028	%	70 - 130%	88
	BH42_0.3	SE181914.029	%	70 - 130%	78
	BH42_2.0	SE181914.031	%	70 - 130%	88
	BH42_4.0	SE181914.032	%	70 - 130%	94
	BH43_0.4	SE181914.033	%	70 - 130%	88
	BH43_3.0	SE181914.034	%	70 - 130%	88
	BH44_0.32-0.42	SE181914.035	%	70 - 130%	88
	BH44_1.0-1.1	SE181914.036	%	70 - 130%	90
	BH45_0.5	SE181914.037	%	70 - 130%	92
	BH45_3.0	SE181914.038	%	70 - 130%	92
	BH46_0.5	SE181914.039	%	70 - 130%	94
	BH46_1.0	SE181914.040	%	70 - 130%	88
	BH47_0.1	SE181914.041	%	70 - 130%	88
	BH47_0.5	SE181914.042	%	70 - 130%	94
	BH48_0.3	SE181914.043	%	70 - 130%	92
	QA01	SE181914.044	%	70 - 130%	104
d5-nitrobenzene (Surrogate)	BH30_0.4-0.5	SE181914.001	%	70 - 130%	86
	BH30_0.9-1.0	SE181914.002	%	70 - 130%	86
	BH31_0.2	SE181914.003	%	70 - 130%	92
	BH31_2.0	SE181914.004	%	70 - 130%	90
	BH32_0.2	SE181914.005	%	70 - 130%	88
	BH32_0.5	SE181914.006	%	70 - 130%	94
	BH33_0.5	SE181914.007	%	70 - 130%	92
	BH33_1.0	SE181914.008	%	70 - 130%	98
	BH34_4.0	SE181914.009	%	70 - 130%	94
	BH34_5.0	SE181914.010	%	70 - 130%	86
	BH35_0.9-1.0	SE181914.011	%	70 - 130%	86
	BH35_2.0	SE181914.012	%	70 - 130%	88
	BH36_0.5	SE181914.013	%	70 - 130%	88
	BH36_1.0	SE181914.014	%	70 - 130%	84
	BH37_0.3	SE181914.015	%	70 - 130%	92
	BH37_2.0	SE181914.017	%	70 - 130%	94
	BH38_0.3	SE181914.018	%	70 - 130%	86
	BH38_1.0	SE181914.020	%	70 - 130%	88
	BH38_3.0	SE181914.021	%	70 - 130%	80
	BH39_0.3	SE181914.022	%	70 - 130%	86
	BH39_1.0	SE181914.023	%	70 - 130%	86

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH40_0.3	SE181914.024	%	70 - 130%	80
	BH40_1.0	SE181914.026	%	70 - 130%	88
	BH41_0.5	SE181914.027	%	70 - 130%	86
	BH41_3.0	SE181914.028	%	70 - 130%	84
	BH42_0.3	SE181914.029	%	70 - 130%	88
	BH42_2.0	SE181914.031	%	70 - 130%	90
	BH42_4.0	SE181914.032	%	70 - 130%	86
	BH43_0.4	SE181914.033	%	70 - 130%	80
	BH43_3.0	SE181914.034	%	70 - 130%	90
	BH44_0.32-0.42	SE181914.035	%	70 - 130%	92
	BH44_1.0-1.1	SE181914.036	%	70 - 130%	90
	BH45_0.5	SE181914.037	%	70 - 130%	86
	BH45_3.0	SE181914.038	%	70 - 130%	86
	BH46_0.5	SE181914.039	%	70 - 130%	88
	BH46_1.0	SE181914.040	%	70 - 130%	82
	BH47_0.1	SE181914.041	%	70 - 130%	80
	BH47_0.5	SE181914.042	%	70 - 130%	86
	BH48_0.3	SE181914.043	%	70 - 130%	84
	QA01	SE181914.044	%	70 - 130%	96

PCBs in Soil — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH30_0.9-1.0	SE181914.002	%	60 - 130%	91
	BH31_2.0	SE181914.004	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	89
	BH33_0.5	SE181914.007	%	60 - 130%	91
	BH34_4.0	SE181914.009	%	60 - 130%	97
	BH35_2.0	SE181914.012	%	60 - 130%	104
	BH36_1.0	SE181914.014	%	60 - 130%	94
	BH37_0.3	SE181914.015	%	60 - 130%	99
	BH38_1.0	SE181914.020	%	60 - 130%	94
	BH39_0.3	SE181914.022	%	60 - 130%	91
	BH40_0.3	SE181914.024	%	60 - 130%	93
	BH41_3.0	SE181914.028	%	60 - 130%	103
	BH42_0.3	SE181914.029	%	60 - 130%	97
	BH43_3.0	SE181914.034	%	60 - 130%	95
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	100
	BH45_0.5	SE181914.037	%	60 - 130%	97
	BH46_0.5	SE181914.039	%	60 - 130%	103
	BH47_0.1	SE181914.041	%	60 - 130%	105

SVCH (incl. chlorinated benzenes and naphthalenes) in soil — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	BH30_0.9-1.0	SE181914.002	%	70 - 130%	88
	BH31_2.0	SE181914.004	%	70 - 130%	88
	BH32_0.5	SE181914.006	%	70 - 130%	88
	BH33_0.5	SE181914.007	%	70 - 130%	90
	BH34_4.0	SE181914.009	%	70 - 130%	90
	BH35_2.0	SE181914.012	%	70 - 130%	88
	BH36_1.0	SE181914.014	%	70 - 130%	88
	BH37_0.3	SE181914.015	%	70 - 130%	88
	BH38_1.0	SE181914.020	%	70 - 130%	86
	BH39_0.3	SE181914.022	%	70 - 130%	88
	BH40_0.3	SE181914.024	%	70 - 130%	80
	BH41_3.0	SE181914.028	%	70 - 130%	86
	BH42_0.3	SE181914.029	%	70 - 130%	76
	BH43_3.0	SE181914.034	%	70 - 130%	82
	BH44_1.0-1.1	SE181914.036	%	70 - 130%	84
	BH45_0.5	SE181914.037	%	70 - 130%	84
	BH46_0.5	SE181914.039	%	70 - 130%	84
	BH47_0.1	SE181914.041	%	70 - 130%	84

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	90
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	82
	BH31_0.2	SE181914.003	%	60 - 130%	87
	BH31_2.0	SE181914.004	%	60 - 130%	78
	BH32_0.2	SE181914.005	%	60 - 130%	90
	BH32_0.5	SE181914.006	%	60 - 130%	91
	BH33_0.5	SE181914.007	%	60 - 130%	81
	BH33_1.0	SE181914.008	%	60 - 130%	87
	BH34_4.0	SE181914.009	%	60 - 130%	103
	BH34_5.0	SE181914.010	%	60 - 130%	98
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	91
	BH35_2.0	SE181914.012	%	60 - 130%	84
	BH36_0.5	SE181914.013	%	60 - 130%	84
	BH36_1.0	SE181914.014	%	60 - 130%	84
	BH37_0.3	SE181914.015	%	60 - 130%	80
	BH37_2.0	SE181914.017	%	60 - 130%	82
	BH38_0.3	SE181914.018	%	60 - 130%	80
	BH38_1.0	SE181914.020	%	60 - 130%	82
	BH38_3.0	SE181914.021	%	60 - 130%	76
	BH39_0.3	SE181914.022	%	60 - 130%	73
	BH39_1.0	SE181914.023	%	60 - 130%	83
	BH40_0.3	SE181914.024	%	60 - 130%	96
	BH40_1.0	SE181914.026	%	60 - 130%	84
	BH41_0.5	SE181914.027	%	60 - 130%	78
	BH41_3.0	SE181914.028	%	60 - 130%	77
	BH42_0.3	SE181914.029	%	60 - 130%	78
	BH42_2.0	SE181914.031	%	60 - 130%	75
	BH42_4.0	SE181914.032	%	60 - 130%	76
	BH43_0.4	SE181914.033	%	60 - 130%	106
	BH43_3.0	SE181914.034	%	60 - 130%	77
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	81
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	77
	BH45_0.5	SE181914.037	%	60 - 130%	75
	BH45_3.0	SE181914.038	%	60 - 130%	74
	BH46_0.5	SE181914.039	%	60 - 130%	77
	BH46_1.0	SE181914.040	%	60 - 130%	76
	BH47_0.1	SE181914.041	%	60 - 130%	79
	BH47_0.5	SE181914.042	%	60 - 130%	80
	BH48_0.3	SE181914.043	%	60 - 130%	79
	QA01	SE181914.044	%	60 - 130%	80
	Trip Spike	SE181914.045	%	60 - 130%	97
	Trip Blank	SE181914.046	%	60 - 130%	81
d4-1,2-dichloroethane (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	95
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	114
	BH31_0.2	SE181914.003	%	60 - 130%	94
	BH31_2.0	SE181914.004	%	60 - 130%	87
	BH32_0.2	SE181914.005	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	92
	BH33_0.5	SE181914.007	%	60 - 130%	94
	BH33_1.0	SE181914.008	%	60 - 130%	91
	BH34_4.0	SE181914.009	%	60 - 130%	101
	BH34_5.0	SE181914.010	%	60 - 130%	95
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	92
	BH35_2.0	SE181914.012	%	60 - 130%	89
	BH36_0.5	SE181914.013	%	60 - 130%	87
	BH36_1.0	SE181914.014	%	60 - 130%	88
	BH37_0.3	SE181914.015	%	60 - 130%	88
	BH37_2.0	SE181914.017	%	60 - 130%	92
	BH38_0.3	SE181914.018	%	60 - 130%	96
	BH38_1.0	SE181914.020	%	60 - 130%	90
	BH38_3.0	SE181914.021	%	60 - 130%	78

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH39_0.3	SE181914.022	%	60 - 130%	79
	BH39_1.0	SE181914.023	%	60 - 130%	80
	BH40_0.3	SE181914.024	%	60 - 130%	82
	BH40_1.0	SE181914.026	%	60 - 130%	88
	BH41_0.5	SE181914.027	%	60 - 130%	99
	BH41_3.0	SE181914.028	%	60 - 130%	78
	BH42_0.3	SE181914.029	%	60 - 130%	82
	BH42_2.0	SE181914.031	%	60 - 130%	99
	BH42_4.0	SE181914.032	%	60 - 130%	71
	BH43_0.4	SE181914.033	%	60 - 130%	81
	BH43_3.0	SE181914.034	%	60 - 130%	78
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	84
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	80
	BH45_0.5	SE181914.037	%	60 - 130%	82
	BH45_3.0	SE181914.038	%	60 - 130%	78
	BH46_0.5	SE181914.039	%	60 - 130%	84
	BH46_1.0	SE181914.040	%	60 - 130%	81
	BH47_0.1	SE181914.041	%	60 - 130%	82
	BH47_0.5	SE181914.042	%	60 - 130%	86
	BH48_0.3	SE181914.043	%	60 - 130%	79
	QA01	SE181914.044	%	60 - 130%	82
	Trip Spike	SE181914.045	%	60 - 130%	78
	Trip Blank	SE181914.046	%	60 - 130%	81
d8-toluene (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	95
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	101
	BH31_0.2	SE181914.003	%	60 - 130%	96
	BH31_2.0	SE181914.004	%	60 - 130%	93
	BH32_0.2	SE181914.005	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	94
	BH33_0.5	SE181914.007	%	60 - 130%	94
	BH33_1.0	SE181914.008	%	60 - 130%	92
	BH34_4.0	SE181914.009	%	60 - 130%	109
	BH34_5.0	SE181914.010	%	60 - 130%	102
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	97
	BH35_2.0	SE181914.012	%	60 - 130%	94
	BH36_0.5	SE181914.013	%	60 - 130%	91
	BH36_1.0	SE181914.014	%	60 - 130%	92
	BH37_0.3	SE181914.015	%	60 - 130%	91
	BH37_2.0	SE181914.017	%	60 - 130%	94
	BH38_0.3	SE181914.018	%	60 - 130%	96
	BH38_1.0	SE181914.020	%	60 - 130%	90
	BH38_3.0	SE181914.021	%	60 - 130%	80
	BH39_0.3	SE181914.022	%	60 - 130%	85
	BH39_1.0	SE181914.023	%	60 - 130%	84
	BH40_0.3	SE181914.024	%	60 - 130%	79
	BH40_1.0	SE181914.026	%	60 - 130%	87
	BH41_0.5	SE181914.027	%	60 - 130%	78
	BH41_3.0	SE181914.028	%	60 - 130%	78
	BH42_0.3	SE181914.029	%	60 - 130%	79
	BH42_2.0	SE181914.031	%	60 - 130%	77
	BH42_4.0	SE181914.032	%	60 - 130%	71
	BH43_0.4	SE181914.033	%	60 - 130%	77
	BH43_3.0	SE181914.034	%	60 - 130%	78
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	82
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	76
	BH45_0.5	SE181914.037	%	60 - 130%	80
	BH45_3.0	SE181914.038	%	60 - 130%	72
	BH46_0.5	SE181914.039	%	60 - 130%	76
	BH46_1.0	SE181914.040	%	60 - 130%	75
	BH47_0.1	SE181914.041	%	60 - 130%	80
	BH47_0.5	SE181914.042	%	60 - 130%	81

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH48_0.3	SE181914.043	%	60 - 130%	78
	QA01	SE181914.044	%	60 - 130%	78
	Trip Spike	SE181914.045	%	60 - 130%	82
	Trip Blank	SE181914.046	%	60 - 130%	84
Dibromofluoromethane (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	81
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	84
	BH31_0.2	SE181914.003	%	60 - 130%	80
	BH31_2.0	SE181914.004	%	60 - 130%	71
	BH32_0.2	SE181914.005	%	60 - 130%	76
	BH32_0.5	SE181914.006	%	60 - 130%	76
	BH33_0.5	SE181914.007	%	60 - 130%	81
	BH33_1.0	SE181914.008	%	60 - 130%	77
	BH34_4.0	SE181914.009	%	60 - 130%	86
	BH34_5.0	SE181914.010	%	60 - 130%	81
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	79
	BH35_2.0	SE181914.012	%	60 - 130%	80
	BH36_0.5	SE181914.013	%	60 - 130%	77
	BH36_1.0	SE181914.014	%	60 - 130%	77
	BH37_0.3	SE181914.015	%	60 - 130%	79
	BH37_2.0	SE181914.017	%	60 - 130%	82
	BH38_0.3	SE181914.018	%	60 - 130%	81
	BH38_1.0	SE181914.020	%	60 - 130%	80
	BH38_3.0	SE181914.021	%	60 - 130%	83
	BH39_0.3	SE181914.022	%	60 - 130%	81
	BH39_1.0	SE181914.023	%	60 - 130%	76
	BH40_0.3	SE181914.024	%	60 - 130%	74
	BH40_1.0	SE181914.026	%	60 - 130%	90
	BH41_0.5	SE181914.027	%	60 - 130%	71
	BH41_3.0	SE181914.028	%	60 - 130%	82
	BH42_0.3	SE181914.029	%	60 - 130%	71
	BH42_2.0	SE181914.031	%	60 - 130%	96
	BH42_4.0	SE181914.032	%	60 - 130%	80
	BH43_0.4	SE181914.033	%	60 - 130%	81
	BH43_3.0	SE181914.034	%	60 - 130%	88
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	93
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	87
	BH45_0.5	SE181914.037	%	60 - 130%	82
	BH45_3.0	SE181914.038	%	60 - 130%	104
	BH46_0.5	SE181914.039	%	60 - 130%	83
	BH46_1.0	SE181914.040	%	60 - 130%	73
	BH47_0.1	SE181914.041	%	60 - 130%	90
	BH47_0.5	SE181914.042	%	60 - 130%	79
	BH48_0.3	SE181914.043	%	60 - 130%	78
	QA01	SE181914.044	%	60 - 130%	93
	Trip Spike	SE181914.045	%	60 - 130%	76
	Trip Blank	SE181914.046	%	60 - 130%	74

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	90
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	82
	BH31_0.2	SE181914.003	%	60 - 130%	87
	BH31_2.0	SE181914.004	%	60 - 130%	78
	BH32_0.2	SE181914.005	%	60 - 130%	90
	BH32_0.5	SE181914.006	%	60 - 130%	91
	BH33_0.5	SE181914.007	%	60 - 130%	81
	BH33_1.0	SE181914.008	%	60 - 130%	87
	BH34_4.0	SE181914.009	%	60 - 130%	103
	BH34_5.0	SE181914.010	%	60 - 130%	98
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	91
	BH35_2.0	SE181914.012	%	60 - 130%	84

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH36_0.5	SE181914.013	%	60 - 130%	84
	BH36_1.0	SE181914.014	%	60 - 130%	84
	BH37_0.3	SE181914.015	%	60 - 130%	80
	BH37_2.0	SE181914.017	%	60 - 130%	82
	BH38_0.3	SE181914.018	%	60 - 130%	80
	BH38_1.0	SE181914.020	%	60 - 130%	82
	BH38_3.0	SE181914.021	%	60 - 130%	76
	BH39_0.3	SE181914.022	%	60 - 130%	73
	BH39_1.0	SE181914.023	%	60 - 130%	83
	BH40_0.3	SE181914.024	%	60 - 130%	96
	BH40_1.0	SE181914.026	%	60 - 130%	84
	BH41_0.5	SE181914.027	%	60 - 130%	78
	BH41_3.0	SE181914.028	%	60 - 130%	77
	BH42_0.3	SE181914.029	%	60 - 130%	78
	BH42_2.0	SE181914.031	%	60 - 130%	75
	BH42_4.0	SE181914.032	%	60 - 130%	76
	BH43_0.4	SE181914.033	%	60 - 130%	106
	BH43_3.0	SE181914.034	%	60 - 130%	77
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	81
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	77
	BH45_0.5	SE181914.037	%	60 - 130%	75
	BH45_3.0	SE181914.038	%	60 - 130%	74
	BH46_0.5	SE181914.039	%	60 - 130%	77
	BH46_1.0	SE181914.040	%	60 - 130%	76
	BH47_0.1	SE181914.041	%	60 - 130%	79
	BH47_0.5	SE181914.042	%	60 - 130%	80
	BH48_0.3	SE181914.043	%	60 - 130%	79
	QA01	SE181914.044	%	60 - 130%	80
d4-1,2-dichloroethane (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	95
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	114
	BH31_0.2	SE181914.003	%	60 - 130%	94
	BH31_2.0	SE181914.004	%	60 - 130%	87
	BH32_0.2	SE181914.005	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	92
	BH33_0.5	SE181914.007	%	60 - 130%	94
	BH33_1.0	SE181914.008	%	60 - 130%	91
	BH34_4.0	SE181914.009	%	60 - 130%	101
	BH34_5.0	SE181914.010	%	60 - 130%	95
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	92
	BH35_2.0	SE181914.012	%	60 - 130%	89
	BH36_0.5	SE181914.013	%	60 - 130%	87
	BH36_1.0	SE181914.014	%	60 - 130%	88
	BH37_0.3	SE181914.015	%	60 - 130%	88
	BH37_2.0	SE181914.017	%	60 - 130%	92
	BH38_0.3	SE181914.018	%	60 - 130%	96
	BH38_1.0	SE181914.020	%	60 - 130%	90
	BH38_3.0	SE181914.021	%	60 - 130%	78
	BH39_0.3	SE181914.022	%	60 - 130%	79
	BH39_1.0	SE181914.023	%	60 - 130%	80
	BH40_0.3	SE181914.024	%	60 - 130%	82
	BH40_1.0	SE181914.026	%	60 - 130%	88
	BH41_0.5	SE181914.027	%	60 - 130%	99
	BH41_3.0	SE181914.028	%	60 - 130%	78
	BH42_0.3	SE181914.029	%	60 - 130%	82
	BH42_2.0	SE181914.031	%	60 - 130%	99
	BH42_4.0	SE181914.032	%	60 - 130%	71
	BH43_0.4	SE181914.033	%	60 - 130%	81
	BH43_3.0	SE181914.034	%	60 - 130%	78
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	84
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	80
	BH45_0.5	SE181914.037	%	60 - 130%	82

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH45_3.0	SE181914.038	%	60 - 130%	78
	BH46_0.5	SE181914.039	%	60 - 130%	84
	BH46_1.0	SE181914.040	%	60 - 130%	81
	BH47_0.1	SE181914.041	%	60 - 130%	82
	BH47_0.5	SE181914.042	%	60 - 130%	86
	BH48_0.3	SE181914.043	%	60 - 130%	79
	QA01	SE181914.044	%	60 - 130%	82
d8-toluene (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	95
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	101
	BH31_0.2	SE181914.003	%	60 - 130%	96
	BH31_2.0	SE181914.004	%	60 - 130%	93
	BH32_0.2	SE181914.005	%	60 - 130%	93
	BH32_0.5	SE181914.006	%	60 - 130%	94
	BH33_0.5	SE181914.007	%	60 - 130%	94
	BH33_1.0	SE181914.008	%	60 - 130%	92
	BH34_4.0	SE181914.009	%	60 - 130%	109
	BH34_5.0	SE181914.010	%	60 - 130%	102
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	97
	BH35_2.0	SE181914.012	%	60 - 130%	94
	BH36_0.5	SE181914.013	%	60 - 130%	91
	BH36_1.0	SE181914.014	%	60 - 130%	92
	BH37_0.3	SE181914.015	%	60 - 130%	91
	BH37_2.0	SE181914.017	%	60 - 130%	94
	BH38_0.3	SE181914.018	%	60 - 130%	96
	BH38_1.0	SE181914.020	%	60 - 130%	90
	BH38_3.0	SE181914.021	%	60 - 130%	80
	BH39_0.3	SE181914.022	%	60 - 130%	85
	BH39_1.0	SE181914.023	%	60 - 130%	84
	BH40_0.3	SE181914.024	%	60 - 130%	79
	BH40_1.0	SE181914.026	%	60 - 130%	87
	BH41_0.5	SE181914.027	%	60 - 130%	78
	BH41_3.0	SE181914.028	%	60 - 130%	78
	BH42_0.3	SE181914.029	%	60 - 130%	79
	BH42_2.0	SE181914.031	%	60 - 130%	77
	BH42_4.0	SE181914.032	%	60 - 130%	71
	BH43_0.4	SE181914.033	%	60 - 130%	77
	BH43_3.0	SE181914.034	%	60 - 130%	78
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	82
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	76
	BH45_0.5	SE181914.037	%	60 - 130%	80
	BH45_3.0	SE181914.038	%	60 - 130%	72
	BH46_0.5	SE181914.039	%	60 - 130%	76
	BH46_1.0	SE181914.040	%	60 - 130%	75
	BH47_0.1	SE181914.041	%	60 - 130%	80
	BH47_0.5	SE181914.042	%	60 - 130%	81
	BH48_0.3	SE181914.043	%	60 - 130%	78
	QA01	SE181914.044	%	60 - 130%	78
Dibromofluoromethane (Surrogate)	BH30_0.4-0.5	SE181914.001	%	60 - 130%	81
	BH30_0.9-1.0	SE181914.002	%	60 - 130%	84
	BH31_0.2	SE181914.003	%	60 - 130%	80
	BH31_2.0	SE181914.004	%	60 - 130%	71
	BH32_0.2	SE181914.005	%	60 - 130%	76
	BH32_0.5	SE181914.006	%	60 - 130%	76
	BH33_0.5	SE181914.007	%	60 - 130%	81
	BH33_1.0	SE181914.008	%	60 - 130%	77
	BH34_4.0	SE181914.009	%	60 - 130%	86
	BH34_5.0	SE181914.010	%	60 - 130%	81
	BH35_0.9-1.0	SE181914.011	%	60 - 130%	79
	BH35_2.0	SE181914.012	%	60 - 130%	80
	BH36_0.5	SE181914.013	%	60 - 130%	77
	BH36_1.0	SE181914.014	%	60 - 130%	77

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH37_0.3	SE181914.015	%	60 - 130%	79
	BH37_2.0	SE181914.017	%	60 - 130%	82
	BH38_0.3	SE181914.018	%	60 - 130%	81
	BH38_1.0	SE181914.020	%	60 - 130%	80
	BH38_3.0	SE181914.021	%	60 - 130%	83
	BH39_0.3	SE181914.022	%	60 - 130%	81
	BH39_1.0	SE181914.023	%	60 - 130%	76
	BH40_0.3	SE181914.024	%	60 - 130%	74
	BH40_1.0	SE181914.026	%	60 - 130%	90
	BH41_0.5	SE181914.027	%	60 - 130%	71
	BH41_3.0	SE181914.028	%	60 - 130%	82
	BH42_0.3	SE181914.029	%	60 - 130%	71
	BH42_2.0	SE181914.031	%	60 - 130%	96
	BH42_4.0	SE181914.032	%	60 - 130%	80
	BH43_0.4	SE181914.033	%	60 - 130%	81
	BH43_3.0	SE181914.034	%	60 - 130%	88
	BH44_0.32-0.42	SE181914.035	%	60 - 130%	93
	BH44_1.0-1.1	SE181914.036	%	60 - 130%	87
	BH45_0.5	SE181914.037	%	60 - 130%	82
	BH45_3.0	SE181914.038	%	60 - 130%	104
	BH46_0.5	SE181914.039	%	60 - 130%	83
	BH46_1.0	SE181914.040	%	60 - 130%	73
	BH47_0.1	SE181914.041	%	60 - 130%	90
	BH47_0.5	SE181914.042	%	60 - 130%	79
	BH48_0.3	SE181914.043	%	60 - 130%	78
	QA01	SE181914.044	%	60 - 130%	93

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB153039.001	Mercury	mg/kg	0.05	<0.05
LB153040.001	Mercury	mg/kg	0.05	<0.05
LB153041.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB152985.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	84
LB152988.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB152985.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB152985.001		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	86
		2-fluorobiphenyl (Surrogate)	%	-	84
		d14-p-terphenyl (Surrogate)	%	-	94
LB152988.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	86
		d14-p-terphenyl (Surrogate)	%	-	98

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB152985.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	84
LB152988.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	84

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

SVCH (incl. chlorinated benzenes and naphthalenes) in soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB152985.001	Chlorinated Benzenes, Hydrocarbons & VOCs	Pentachloroethane	mg/kg	0.5	<0.5
		Hexachlorobutadiene	mg/kg	0.5	<0.5
		1,3-dichlorobenzene	mg/kg	0.5	<0.5
		1,4-dichlorobenzene	mg/kg	0.5	<0.5
		1,2-dichlorobenzene	mg/kg	0.5	<0.5
		Hexachloroethane	mg/kg	0.5	<0.5
		1,2,4-trichlorobenzene	mg/kg	0.5	<0.5
		Hexachloropropene	mg/kg	0.5	<0.5
		Hexachlorocyclopentadiene	mg/kg	1	<1
		1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5
		1/2-Chloronaphthalene	mg/kg	1	<1
		Pentachlorobenzene	mg/kg	0.5	<0.5
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Pentachloronitrobenzene	mg/kg	0.5	<0.5
	Surrogates	d14-p-terphenyl (Surrogate)	%	-	88
LB152988.001	Chlorinated Benzenes, Hydrocarbons & VOCs	Pentachloroethane	mg/kg	0.5	<0.5
		Hexachlorobutadiene	mg/kg	0.5	<0.5
		1,3-dichlorobenzene	mg/kg	0.5	<0.5
		1,4-dichlorobenzene	mg/kg	0.5	<0.5
		1,2-dichlorobenzene	mg/kg	0.5	<0.5
		Hexachloroethane	mg/kg	0.5	<0.5
		1,2,4-trichlorobenzene	mg/kg	0.5	<0.5
		Hexachloropropene	mg/kg	0.5	<0.5
		Hexachlorocyclopentadiene	mg/kg	1	<1
		1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5
		1/2-Chloronaphthalene	mg/kg	1	<1
		Pentachlorobenzene	mg/kg	0.5	<0.5
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Pentachloronitrobenzene	mg/kg	0.5	<0.5
	Surrogates	d14-p-terphenyl (Surrogate)	%	-	88

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB153062.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0
LB153063.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0
LB153064.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB152985.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB152988.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB152937.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	73
		d4-1,2-dichloroethane (Surrogate)	%	-	79
		d8-toluene (Surrogate)	%	-	73
		Bromofluorobenzene (Surrogate)	%	-	72
	Totals	Total BTEX	mg/kg	0.6	<0.6
LB152938.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	81
		d4-1,2-dichloroethane (Surrogate)	%	-	80
		d8-toluene (Surrogate)	%	-	84
		Bromofluorobenzene (Surrogate)	%	-	80
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB152937.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	73
		d4-1,2-dichloroethane (Surrogate)	%	-	79
		d8-toluene (Surrogate)	%	-	73
LB152938.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	81
		d4-1,2-dichloroethane (Surrogate)	%	-	80
		d8-toluene (Surrogate)	%	-	84

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181901.004	LB153039.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE181904.006	LB153041.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE181914.007	LB153039.024	Mercury	mg/kg	0.05	<0.05	<0.05	148	0
SE181914.018	LB153040.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE181914.029	LB153040.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE181914.040	LB153041.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.010	LB153046.011	% Moisture	%w/w	0.5	9.1	9.2	41	0
SE181914.022	LB153046.022	% Moisture	%w/w	0.5	11	12	39	8
SE181914.034	LB153046.033	% Moisture	%w/w	0.5	7.8	8.0	43	2
SE181914.044	LB153046.044	% Moisture	%w/w	0.5	8.6	7.4	42	15
SE181914.046	LB153046.046	% Moisture	%w/w	0.5	<0.5	<0.5	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.030		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0.02	200	0
			Lindane	mg/kg	0.1	<0.1	0.02	200	0
			Heptachlor	mg/kg	0.1	<0.1	0.02	200	0
			Aldrin	mg/kg	0.1	<0.1	0.01	200	0
			Beta BHC	mg/kg	0.1	<0.1	0.05	200	0
			Delta BHC	mg/kg	0.1	<0.1	0.01	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0.01	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0.01	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	0.05	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0.02	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0.03	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0.01	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0.02	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0.02	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0.06	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0.01	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0.03	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0.23	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.137	30	1
SE181914.029	LB152988.027		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0	200	0
			Lindane	mg/kg	0.1	<0.1	0	200	0
			Heptachlor	mg/kg	0.1	<0.1	0	200	0
			Aldrin	mg/kg	0.1	<0.1	0	200	0
			Beta BHC	mg/kg	0.1	<0.1	0	200	0
			Delta BHC	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.029	LB152988.027		o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.143	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.027		Naphthalene	mg/kg	0.1	<0.1	0.03	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.02	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.02	200	0
			Acenaphthylene	mg/kg	0.1	0.1	0.17	104	52
			Acenaphthene	mg/kg	0.1	<0.1	0.01	200	0
			Fluorene	mg/kg	0.1	<0.1	0.01	200	0
			Phenanthrene	mg/kg	0.1	0.3	0.24	65	32
			Anthracene	mg/kg	0.1	<0.1	0.07	163	0
			Fluoranthene	mg/kg	0.1	0.6	0.67	46	18
			Pyrene	mg/kg	0.1	0.5	0.65	47	26
			Benzo(a)anthracene	mg/kg	0.1	0.3	0.32	64	17
			Chrysene	mg/kg	0.1	0.3	0.3	65	11
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.4	0.41	56	10
			Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.2	83	11
			Benzo(a)pyrene	mg/kg	0.1	0.3	0.34	62	16
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.2	0.19	87	17
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.2	0.18	91	18
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0.4	0.4578	57	15
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.5	0.5578	67	12
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.4	0.5078	52	14
			Total PAH (18)	mg/kg	0.8	3.2	3.68	53	15
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.47	30	9
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.44	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.45	30	0
SE181914.020	LB152985.028		Naphthalene	mg/kg	0.1	<0.1	0	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0	200	0
			Anthracene	mg/kg	0.1	<0.1	0	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.02	200	0
			Pyrene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.02	200	0
			Chrysene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.03	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.02	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.01	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.01	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.020	LB152985.028		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.45	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.45	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.48	30	4
SE181914.029	LB152988.027		Naphthalene	mg/kg	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.01	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.05	200	0
			Anthracene	mg/kg	0.1	<0.1	0.01	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.06	200	0
			Pyrene	mg/kg	0.1	<0.1	0.04	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.02	200	0
			Chrysene	mg/kg	0.1	<0.1	0.02	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.44	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	7
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3
SE181914.033	LB152988.028		Naphthalene	mg/kg	0.1	0.8	0.62	44	23
			2-methylnaphthalene	mg/kg	0.1	0.3	0.22	68	31
			1-methylnaphthalene	mg/kg	0.1	0.2	0.14	89	35
			Acenaphthylene	mg/kg	0.1	<0.1	0.03	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0.01	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	0.4	0.35	56	21
			Anthracene	mg/kg	0.1	<0.1	0.02	200	0
			Fluoranthene	mg/kg	0.1	0.4	0.3	61	15
			Pyrene	mg/kg	0.1	0.3	0.26	66	14
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.08	155	0
			Chrysene	mg/kg	0.1	<0.1	0.08	148	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.1	0.11	121	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.04	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.05	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.02	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.02	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	2.4	1.89	68	22
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.44	30	10
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.46	30	7
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.45	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.026	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.026		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1260	mg/kg	0.2	0.3	0.25	105	11
			Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0.25	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.137	30	1
SE181914.029	LB152988.026		Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.143	30	1

SVCH (incl. chlorinated benzenes and naphthalenes) in soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.029	Chlorinated	Pentachloroethane	mg/kg	0.5	<0.5	0.01	200	0
		Benzenes,	Hexachlorobutadiene	mg/kg	0.5	<0.5	0	200	0
			1,3-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1,4-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1,2-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			Hexachloroethane	mg/kg	0.5	<0.5	0.01	200	0
			1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	0.01	200	0
			Hexachloropropene	mg/kg	0.5	<0.5	0	200	0
			1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	0	200	0
			Hexachlorocyclopentadiene	mg/kg	1	<1	0	200	0
			1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1/2-Chloronaphthalene	mg/kg	1	<1	0	200	0
			Pentachlorobenzene	mg/kg	0.5	<0.5	0	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Pentachloronitrobenzene	mg/kg	0.5	<0.5	0.01	200	0
		Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.46	30	4
SE181914.029	LB152988.029	Chlorinated	Pentachloroethane	mg/kg	0.5	<0.5	0	200	0
		Benzenes,	Hexachlorobutadiene	mg/kg	0.5	<0.5	0	200	0
			1,3-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1,4-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1,2-dichlorobenzene	mg/kg	0.5	<0.5	0	200	0
			Hexachloroethane	mg/kg	0.5	<0.5	0	200	0
			1,2,4-trichlorobenzene	mg/kg	0.5	<0.5	0.01	200	0
			Hexachloropropene	mg/kg	0.5	<0.5	0	200	0
			1,2,3,5 & 1,2,4,5-tetrachlorobenzene	mg/kg	1	<1	0	200	0
			Hexachlorocyclopentadiene	mg/kg	1	<1	0	200	0
			1,2,3,4-tetrachlorobenzene	mg/kg	0.5	<0.5	0	200	0
			1/2-Chloronaphthalene	mg/kg	1	<1	0	200	0
			Pentachlorobenzene	mg/kg	0.5	<0.5	0	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0.01	200	0
			Pentachloronitrobenzene	mg/kg	0.5	<0.5	0	200	0
		Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.36	30	5

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181901.001	LB153062.014	Arsenic, As	mg/kg	1	7	6	45	25
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	8.2	7.2	36	13
		Copper, Cu	mg/kg	0.5	29	24	32	21
		Nickel, Ni	mg/kg	0.5	7.5	7.5	37	1

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181901.001	LB153062.014	Lead, Pb	mg/kg	1	9	9	41	3
		Zinc, Zn	mg/kg	2	44	40	35	10
SE181904.003	LB153064.024	Arsenic, As	mg/kg	1	5	6	48	31
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	21	21	32	0
		Copper, Cu	mg/kg	0.5	9.4	7.6	36	21
		Nickel, Ni	mg/kg	0.5	2.0	2.0	55	2
		Lead, Pb	mg/kg	1	37	24	33	42 ②
		Zinc, Zn	mg/kg	2	9.4	8.7	52	8
SE181914.004	LB153062.024	Arsenic, As	mg/kg	1	2	4	62	47
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	9.9	11	35	10
		Copper, Cu	mg/kg	0.5	810	680	30	18
		Nickel, Ni	mg/kg	0.5	11	12	34	12
		Lead, Pb	mg/kg	1	190	240	30	26
		Zinc, Zn	mg/kg	2	110	100	32	2
SE181914.014	LB153063.014	Arsenic, As	mg/kg	1	5	5	51	2
		Cadmium, Cd	mg/kg	0.3	<0.3	0.3	148	14
		Chromium, Cr	mg/kg	0.3	8.4	11	35	25
		Copper, Cu	mg/kg	0.5	15	14	33	2
		Nickel, Ni	mg/kg	0.5	0.6	0.7	106	22
		Lead, Pb	mg/kg	1	18	20	35	9
		Zinc, Zn	mg/kg	2	6.0	7.1	60	16
SE181914.026	LB153063.024	Arsenic, As	mg/kg	1	5	3	53	37
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	15	8.3	34	55 ②
		Copper, Cu	mg/kg	0.5	12	9.9	35	17
		Nickel, Ni	mg/kg	0.5	2.0	0.9	65	78 ②
		Lead, Pb	mg/kg	1	20	14	36	33
		Zinc, Zn	mg/kg	2	8.0	4.8	61	49
SE181914.037	LB153064.014	Arsenic, As	mg/kg	1	3	3	67	15
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	4.7	7.0	38	39 ②
		Copper, Cu	mg/kg	0.5	24	24	32	2
		Nickel, Ni	mg/kg	0.5	2.9	3.4	46	16
		Lead, Pb	mg/kg	1	20	20	35	2
		Zinc, Zn	mg/kg	2	25	26	38	7

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.002	LB152985.027		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	390	393	41	1
			TRH C29-C36	mg/kg	45	190	187	54	1
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	580	580	49	1
			TRH C10-C40 Total (F bands)	mg/kg	210	540	537	69	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	540	537	47	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE181914.020	LB152985.028		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE181914.029	LB152988.027		TRH C10-C14	mg/kg	20	<20	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.029	LB152988.027		TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE181914.033	LB152988.028		TRH C10-C14	mg/kg	20	89	74	55	18
			TRH C15-C28	mg/kg	45	140	157	60	9
			TRH C29-C36	mg/kg	45	71	75	92	5
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	300	306	66	1
			TRH C10-C40 Total (F bands)	mg/kg	210	280	289	104	3
		TRH F Bands	TRH >C10-C16	mg/kg	25	84	73	62	14
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	84	73	62	14
			TRH >C16-C34 (F3)	mg/kg	90	200	216	74	10
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.010	LB152937.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	168	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	148	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.5	50	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	5.1	50	7
			d8-toluene (Surrogate)	mg/kg	-	5.1	5.6	50	8
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5.4	50	8
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	188	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	160	0
SE181914.020	LB152937.023	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.0	50	0
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.5	50	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.0	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE181914.032	LB152938.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.0	50	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.6	3.7	50	4
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.6	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	3.9	50	4
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE181914.044	LB152938.034	Monocyclic	Benzene	mg/kg	0.1	<0.1	0	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	0.01	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.044	LB152938.034	Monocyclic	m/p-xylene	mg/kg	0.2	<0.2	0.01	200	0
		Aromatic	o-xylene	mg/kg	0.1	<0.1	0.01	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.6	3.71	50	22
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	4.13	50	1
			d8-toluene (Surrogate)	mg/kg	-	3.9	4.09	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	3.93	50	2
		Totals	Total Xylenes	mg/kg	0.3	<0.3	0.02	200	0
			Total BTEX	mg/kg	0.6	<0.6	0.03	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181914.010	LB152937.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.5	30	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	5.1	30	7
			d8-toluene (Surrogate)	mg/kg	-	5.1	5.6	30	8
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5.4	30	8
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE181914.020	LB152937.023		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.0	30	0
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.4	30	2
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.5	30	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.0	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE181914.032	LB152938.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	4.0	30	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.6	3.7	30	4
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.6	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	3.9	30	4
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE181914.044	LB152938.034		TRH C6-C10	mg/kg	25	<25	1.64	200	0
			TRH C6-C9	mg/kg	20	<20	0.76	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.6	3.71	30	22
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	4.13	30	1
			d8-toluene (Surrogate)	mg/kg	-	3.9	4.09	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	3.93	30	2
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	1.61	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB153039.002		Mercury	mg/kg	0.05	0.19	0.2	70 - 130	95
LB153040.002		Mercury	mg/kg	0.05	0.24	0.2	70 - 130	122
LB153041.002		Mercury	mg/kg	0.05	0.20	0.2	70 - 130	101

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152985.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	110
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	95
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	85
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	95
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	95
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	95
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	79
LB152988.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	110
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	97
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	87
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	93
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	94
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	93
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	79

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152985.002		Naphthalene	mg/kg	0.1	4.2	4	60 - 140	104
		Acenaphthylene	mg/kg	0.1	4.1	4	60 - 140	104
		Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	101
		Phenanthrene	mg/kg	0.1	4.6	4	60 - 140	115
		Anthracene	mg/kg	0.1	4.5	4	60 - 140	112
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	107
		Benzo(a)pyrene	mg/kg	0.1	4.7	4	60 - 140	117
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
LB152988.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	110
		Acenaphthylene	mg/kg	0.1	4.8	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	103
		Phenanthrene	mg/kg	0.1	4.7	4	60 - 140	117
		Anthracene	mg/kg	0.1	4.5	4	60 - 140	113
		Fluoranthene	mg/kg	0.1	4.6	4	60 - 140	114
		Pyrene	mg/kg	0.1	4.4	4	60 - 140	111
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	116
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152985.002		Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	125
LB152988.002		Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	125

SVCH (incl. chlorinated benzenes and naphthalenes) in soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152985.002	Chlorinated	Hexachlorobutadiene	mg/kg	0.5	0.9	1	70 - 130	94
	Benzenes,	Hexachloroethane	mg/kg	0.5	1.0	1	70 - 130	104
		1,2,3,4-tetrachlorobenzene	mg/kg	0.5	0.9	1	70 - 130	85
		Pentachlorobenzene	mg/kg	0.5	0.8	1	70 - 130	78
		Hexachlorobenzene (HCB)	mg/kg	0.1	0.8	1	70 - 130	77
		Pentachloronitrobenzene	mg/kg	0.5	0.8	1	70 - 130	82
	Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
LB152988.002	Chlorinated	Hexachlorobutadiene	mg/kg	0.5	0.9	1	70 - 130	94
	Benzenes,	Hexachloroethane	mg/kg	0.5	1.0	1	70 - 130	104

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

SVCH (incl. chlorinated benzenes and naphthalenes) in soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152988.002	Chlorinated	1,2,3,4-tetrachlorobenzene	mg/kg	0.5	0.9	1	70 - 130	85
	Benzenes,	Pentachlorobenzene	mg/kg	0.5	0.8	1	70 - 130	78
		Hexachlorobenzene (HCB)	mg/kg	0.1	0.8	1	70 - 130	77
		Pentachloronitrobenzene	mg/kg	0.5	0.8	1	70 - 130	82
	Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB153062.002	Arsenic, As	mg/kg	1	340	336.32	79 - 120	102
	Cadmium, Cd	mg/kg	0.3	440	416.6	69 - 131	107
	Chromium, Cr	mg/kg	0.3	41	35.2	80 - 120	118
	Copper, Cu	mg/kg	0.5	390	370.46	80 - 120	105
	Nickel, Ni	mg/kg	0.5	210	210.88	79 - 120	98
	Lead, Pb	mg/kg	1	100	107.87	79 - 120	93
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	97
LB153063.002	Arsenic, As	mg/kg	1	360	336.32	79 - 120	107
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	102
	Chromium, Cr	mg/kg	0.3	36	35.2	80 - 120	103
	Copper, Cu	mg/kg	0.5	320	370.46	80 - 120	87
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	90
	Lead, Pb	mg/kg	1	97	107.87	79 - 120	90
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95
LB153064.002	Arsenic, As	mg/kg	1	340	336.32	79 - 120	102
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	100
	Chromium, Cr	mg/kg	0.3	35	35.2	80 - 120	100
	Copper, Cu	mg/kg	0.5	320	370.46	80 - 120	85
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	89
	Lead, Pb	mg/kg	1	95	107.87	79 - 120	88
	Zinc, Zn	mg/kg	2	280	301.27	80 - 121	94

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152985.002		TRH C10-C14	mg/kg	20	45	40	60 - 140	113
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	105
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	90
	TRH F Bands	TRH >C10-C16	mg/kg	25	43	40	60 - 140	108
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	100
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	90
LB152988.002		TRH C10-C14	mg/kg	20	35	40	60 - 140	88
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	93
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	78
	TRH F Bands	TRH >C10-C16	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	90
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152937.002	Monocyclic	Benzene	mg/kg	0.1	2.5	2.9	60 - 140	86
	Aromatic	Toluene	mg/kg	0.1	2.3	2.9	60 - 140	80
		Ethylbenzene	mg/kg	0.1	2.1	2.9	60 - 140	73
		m/p-xylene	mg/kg	0.2	5.1	5.8	60 - 140	88
		o-xylene	mg/kg	0.1	2.3	2.9	60 - 140	78
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
		d8-toluene (Surrogate)	mg/kg	-	4.9	5	60 - 140	98
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.0	5	60 - 140	99
LB152938.002	Monocyclic	Benzene	mg/kg	0.1	2.5	2.9	60 - 140	85
	Aromatic	Toluene	mg/kg	0.1	2.0	2.9	60 - 140	69
		Ethylbenzene	mg/kg	0.1	2.0	2.9	60 - 140	68
		m/p-xylene	mg/kg	0.2	4.5	5.8	60 - 140	78
		o-xylene	mg/kg	0.1	2.0	2.9	60 - 140	69
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	5	60 - 140	79

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152938.002	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	78
		d8-toluene (Surrogate)	mg/kg	-	4.1	5	60 - 140	82
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152937.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	92
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	80
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
		d8-toluene (Surrogate)	mg/kg	-	4.9	5	60 - 140	98
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.0	5	60 - 140	99
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	117
LB152938.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	86
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	78
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	5	60 - 140	79
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	78
		d8-toluene (Surrogate)	mg/kg	-	4.1	5	60 - 140	82
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	114

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181900.005	LB153039.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	93
SE181914.008	LB153040.004	Mercury	mg/kg	0.05	0.29	0.11	0.2	94
SE181914.031	LB153041.004	Mercury	mg/kg	0.05	0.24	<0.05	0.2	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE181914.001	LB152985.026		Naphthalene	mg/kg	0.1	<0.1	4	100
			2-methylnaphthalene	mg/kg	0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	<0.1	4	106
			Acenaphthene	mg/kg	0.1	<0.1	4	95
			Fluorene	mg/kg	0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	0.1	4	104
			Anthracene	mg/kg	0.1	<0.1	4	102
			Fluoranthene	mg/kg	0.1	<0.1	4	105
			Pyrene	mg/kg	0.1	<0.1	4	97
			Benzo(a)anthracene	mg/kg	0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	<0.1	4	114
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	-	84
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	82
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	-	88
SE181914.027	LB152988.026		Naphthalene	mg/kg	0.1	<0.1	4	103
			2-methylnaphthalene	mg/kg	0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	<0.1	4	104
			Acenaphthene	mg/kg	0.1	<0.1	4	97
			Fluorene	mg/kg	0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	<0.1	4	112
			Anthracene	mg/kg	0.1	<0.1	4	104
			Fluoranthene	mg/kg	0.1	<0.1	4	106
			Pyrene	mg/kg	0.1	<0.1	4	102
			Benzo(a)anthracene	mg/kg	0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	<0.1	4	97
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	-	82
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	78
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	-	86

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181900.002	LB153062.004		Arsenic, As	mg/kg	1	50	5	50	91
			Cadmium, Cd	mg/kg	0.3	49	<0.3	50	98
			Chromium, Cr	mg/kg	0.3	67	18	50	98
			Copper, Cu	mg/kg	0.5	81	25	50	112
			Nickel, Ni	mg/kg	0.5	64	17	50	93
			Lead, Pb	mg/kg	1	61	15	50	92
			Zinc, Zn	mg/kg	2	93	43	50	100
SE181914.005	LB153063.004		Arsenic, As	mg/kg	1	58	6	50	103
			Cadmium, Cd	mg/kg	0.3	48	0.3	50	95
			Chromium, Cr	mg/kg	0.3	83	36	50	93
			Copper, Cu	mg/kg	0.5	170	48	50	239 ④
			Nickel, Ni	mg/kg	0.5	89	44	50	90
			Lead, Pb	mg/kg	1	86	33	50	106
			Zinc, Zn	mg/kg	2	120	80	50	84
SE181914.027	LB153064.004		Arsenic, As	mg/kg	1	50	3	50	94
			Cadmium, Cd	mg/kg	0.3	46	<0.3	50	92
			Chromium, Cr	mg/kg	0.3	50	4.7	50	90
			Copper, Cu	mg/kg	0.5	61	16	50	90
			Nickel, Ni	mg/kg	0.5	47	1.6	50	91
			Lead, Pb	mg/kg	1	62	18	50	87
			Zinc, Zn	mg/kg	2	53	6.6	50	92

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE181914.001	LB152985.026		TRH C10-C14	mg/kg	20	<20	40	118
			TRH C15-C28	mg/kg	45	<45	40	108
			TRH C29-C36	mg/kg	45	<45	40	105
			TRH C37-C40	mg/kg	100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	40	110
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	40	108
			TRH >C34-C40 (F4)	mg/kg	120	<120	-	-
SE181914.027	LB152988.026		TRH C10-C14	mg/kg	20	<20	40	100
			TRH C15-C28	mg/kg	45	<45	40	98
			TRH C29-C36	mg/kg	45	<45	40	60
			TRH C37-C40	mg/kg	100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	40	100
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	40	83
			TRH >C34-C40 (F4)	mg/kg	120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181914.001	LB152937.004	Monocyclic	Benzene	mg/kg	0.1	2.2	<0.1	2.9	75
		Aromatic	Toluene	mg/kg	0.1	2.2	<0.1	2.9	77
			Ethylbenzene	mg/kg	0.1	1.8	<0.1	2.9	63
			m/p-xylene	mg/kg	0.2	4.9	<0.2	5.8	83
			o-xylene	mg/kg	0.1	2.2	<0.1	2.9	74
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	4.0	-	77
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	4.7	-	93
			d8-toluene (Surrogate)	mg/kg	-	4.7	4.8	-	94
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.5	-	93
		Totals	Total Xylenes	mg/kg	0.3	7.0	<0.3	-	-
			Total BTEX	mg/kg	0.6	13	<0.6	-	-
SE181914.021	LB152938.004	Monocyclic	Benzene	mg/kg	0.1	2.4	<0.1	2.9	82
		Aromatic	Toluene	mg/kg	0.1	2.0	<0.1	2.9	68
			Ethylbenzene	mg/kg	0.1	1.9	<0.1	2.9	64

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181914.021	LB152938.004	Monocyclic	m/p-xylene	mg/kg	0.2	4.7	<0.2	5.8	81
		Aromatic	o-xylene	mg/kg	0.1	2.0	<0.1	2.9	70
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	4.1	-	82
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.8	3.9	-	76
			d8-toluene (Surrogate)	mg/kg	-	4.0	4.0	-	80
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	3.8	-	99
		Totals	Total Xylenes	mg/kg	0.3	6.8	<0.3	-	-
			Total BTEX	mg/kg	0.6	13	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181914.001	LB152937.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	87
			TRH C6-C9	mg/kg	20	<20	<20	23.2	72
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	4.0	-	77
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	4.7	-	93
			d8-toluene (Surrogate)	mg/kg	-	4.7	4.8	-	94
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.5	-	93
		VPH F	Benzene (F0)	mg/kg	0.1	2.2	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	114
SE181914.021	LB152938.005		TRH C6-C10	mg/kg	25	<25	<25	24.65	84
			TRH C6-C9	mg/kg	20	<20	<20	23.2	76
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	4.1	-	82
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.8	3.9	-	76
			d8-toluene (Surrogate)	mg/kg	-	4.0	4.0	-	80
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	3.8	-	99
		VPH F	Benzene (F0)	mg/kg	0.1	2.4	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	108

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

QC Sample	Sample Number	Parameter	Units	LOR

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Order Number	(Not specified)
Samples	5

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SGS Reference	**SE181953 R0**
Date Received	25/7/2018
Date Reported	31/7/2018

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

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VOCs in Water [AN433] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003	Trip Spike WATER - 26/7/2018 SE181953.004	Trip Blank WATER - 26/7/2018 SE181953.005
Benzene	µg/L	0.5	**6.7**	<0.5	<0.5	[85%]	<0.5
Toluene	µg/L	0.5	**3.6**	<0.5	<0.5	[117%]	<0.5
Ethylbenzene	µg/L	0.5	**0.6**	<0.5	<0.5	[111%]	<0.5
m/p-xylene	µg/L	1	**6**	**2**	<1	[124%]	<1
o-xylene	µg/L	0.5	**2.4**	**1.3**	<0.5	[118%]	<0.5
Total Xylenes	µg/L	1.5	**8.7**	**2.9**	<1.5	-	<1.5
Total BTEX	µg/L	3	**20**	**3**	<3	-	<3
Naphthalene	µg/L	0.5	**1.0**	<0.5	<0.5	-	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	-	-
Chloromethane	µg/L	5	<5	<5	<5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	-	-
Bromomethane	µg/L	10	<10	<10	<10	-	-
Chloroethane	µg/L	5	<5	<5	<5	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	<1	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	<10	-	-
Iodomethane	µg/L	5	<5	<5	<5	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	-	-
Allyl chloride	µg/L	2	<2	<2	<2	-	-
Carbon disulfide	µg/L	2	<2	<2	<2	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	**2**	<2	<2	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Vinyl acetate	µg/L	10	<10	<10	<10	-	-
MEK (2-butanone)	µg/L	10	<10	<10	<10	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-nitropropane	µg/L	100	<100	<100	<100	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-

VOCs in Water [AN433] Tested: 30/7/2018 (continued)

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003	Trip Spike WATER - 26/7/2018 SE181953.004	Trip Blank WATER - 26/7/2018 SE181953.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	**8.6**	**0.9**	<0.5	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	**6.6**	**0.7**	<0.5	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Total VOC	µg/L	10	**48**	**14**	<10	-	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003
TRH C6-C9	µg/L	40	**58**	<40	<40
Benzene (F0)	µg/L	0.5	**6.7**	<0.5	<0.5
TRH C6-C10	µg/L	50	**160**	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	**140**	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 27/7/2018

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003
TRH C10-C14	µg/L	50	**100**	**270**	<50
TRH C15-C28	µg/L	200	<200	**210**	<200
TRH C29-C36	µg/L	200	<200	**210**	<200
TRH C37-C40	µg/L	200	<200	<200	<200
TRH >C10-C16	µg/L	60	**88**	**260**	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	**700**	<450
TRH C10-C40	µg/L	650	<650	**700**	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	**87**	**260**	<60

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 27/7/2018

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003
Arsenic, As	µg/L	1	**3**	**4**	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1
Copper, Cu	µg/L	1	<1	<1	**2**
Lead, Pb	µg/L	1	<1	<1	<1
Nickel, Ni	µg/L	1	**16**	**5**	**14**
Zinc, Zn	µg/L	5	**29**	**5**	**45**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 30/7/2018

PARAMETER	UOM	LOR	BH35 WATER - 26/7/2018 SE181953.001	BH44 WATER - 26/7/2018 SE181953.002	EXW01 WATER - 26/7/2018 SE181953.003
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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STATEMENT OF QA/QC PERFORMANCE

SE181953 R0

CLIENT DETAILS

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Email	Clement.Joyner@wsp.com
Project	**PS109581**
Order Number	(Not specified)
Samples	5

LABORATORY DETAILS

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SGS Reference	**SE181953 R0**
Date Received	25 Jul 2018
Date Reported	31 Jul 2018

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE181953 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH35	SE181953.001	LB153025	26 Jul 2018	25 Jul 2018	23 Aug 2018	30 Jul 2018	23 Aug 2018	31 Jul 2018
BH44	SE181953.002	LB153025	26 Jul 2018	25 Jul 2018	23 Aug 2018	30 Jul 2018	23 Aug 2018	31 Jul 2018
EXW01	SE181953.003	LB153025	26 Jul 2018	25 Jul 2018	23 Aug 2018	30 Jul 2018	23 Aug 2018	31 Jul 2018

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH35	SE181953.001	LB152934	26 Jul 2018	25 Jul 2018	22 Jan 2019	27 Jul 2018	22 Jan 2019	27 Jul 2018
BH44	SE181953.002	LB152934	26 Jul 2018	25 Jul 2018	22 Jan 2019	27 Jul 2018	22 Jan 2019	27 Jul 2018
EXW01	SE181953.003	LB152934	26 Jul 2018	25 Jul 2018	22 Jan 2019	27 Jul 2018	22 Jan 2019	27 Jul 2018

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH35	SE181953.001	LB152932	26 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
BH44	SE181953.002	LB152932	26 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	31 Jul 2018
EXW01	SE181953.003	LB152932	26 Jul 2018	25 Jul 2018	02 Aug 2018	27 Jul 2018	05 Sep 2018	30 Jul 2018

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH35	SE181953.001	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
BH44	SE181953.002	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
EXW01	SE181953.003	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
Trip Spike	SE181953.004	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
Trip Blank	SE181953.005	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH35	SE181953.001	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
BH44	SE181953.002	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
EXW01	SE181953.003	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
Trip Spike	SE181953.004	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018
Trip Blank	SE181953.005	LB152996	26 Jul 2018	25 Jul 2018	02 Aug 2018	30 Jul 2018	08 Sep 2018	31 Jul 2018

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH35	SE181953.001	%	40 - 130%	90
	BH44	SE181953.002	%	40 - 130%	100
	EXW01	SE181953.003	%	40 - 130%	99
	Trip Spike	SE181953.004	%	40 - 130%	105
	Trip Blank	SE181953.005	%	40 - 130%	112
d4-1,2-dichloroethane (Surrogate)	BH35	SE181953.001	%	40 - 130%	89
	BH44	SE181953.002	%	40 - 130%	95
	EXW01	SE181953.003	%	40 - 130%	100
	Trip Spike	SE181953.004	%	40 - 130%	83
	Trip Blank	SE181953.005	%	40 - 130%	88
d8-toluene (Surrogate)	BH35	SE181953.001	%	40 - 130%	105
	BH44	SE181953.002	%	40 - 130%	97
	EXW01	SE181953.003	%	40 - 130%	93
	Trip Spike	SE181953.004	%	40 - 130%	126
	Trip Blank	SE181953.005	%	40 - 130%	123
Dibromofluoromethane (Surrogate)	BH35	SE181953.001	%	40 - 130%	82
	BH44	SE181953.002	%	40 - 130%	98
	EXW01	SE181953.003	%	40 - 130%	79
	Trip Spike	SE181953.004	%	40 - 130%	80
	Trip Blank	SE181953.005	%	40 - 130%	98

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH35	SE181953.001	%	40 - 130%	112
	BH44	SE181953.002	%	40 - 130%	122
	EXW01	SE181953.003	%	40 - 130%	114
d4-1,2-dichloroethane (Surrogate)	BH35	SE181953.001	%	60 - 130%	81
	BH44	SE181953.002	%	60 - 130%	72
	EXW01	SE181953.003	%	60 - 130%	83
d8-toluene (Surrogate)	BH35	SE181953.001	%	40 - 130%	117
	BH44	SE181953.002	%	40 - 130%	104
	EXW01	SE181953.003	%	40 - 130%	112
Dibromofluoromethane (Surrogate)	BH35	SE181953.001	%	40 - 130%	93
	BH44	SE181953.002	%	40 - 130%	80
	EXW01	SE181953.003	%	40 - 130%	90

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB153025.001	Mercury	mg/L	0.0001	<0.0001

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB152934.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB152932.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB152996.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB152996.001	Halogenated Aromatics	1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<2
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	98
		d4-1,2-dichloroethane (Surrogate)	%	-	90
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	88
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB152996.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	92
		d4-1,2-dichloroethane (Surrogate)	%	-	97
		d8-toluene (Surrogate)	%	-	122
		Bromofluorobenzene (Surrogate)	%	-	115

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181954.001	LB153025.016	Mercury	µg/L	0.0001	-0.0298	-0.0136	200	0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181954.001	LB152934.009	Arsenic, As	µg/L	1	1.029	0.925	117	3
		Cadmium, Cd	µg/L	0.1	0.006	0.005	200	0
		Chromium, Cr	µg/L	1	2.257	2.193	60	3
		Copper, Cu	µg/L	1	1.62	1.601	77	1
		Lead, Pb	µg/L	1	0.532	0.495	200	0
		Nickel, Ni	µg/L	1	0.47	0.45	200	0
		Zinc, Zn	µg/L	5	0.842	0.897	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE181953.001	LB152932.012		TRH C10-C14	µg/L	50	100	84	84	17
			TRH C15-C28	µg/L	200	<200	0	200	0
			TRH C29-C36	µg/L	200	<200	0	200	0
			TRH C37-C40	µg/L	200	<200	0	200	0
			TRH C10-C36	µg/L	450	<450	84	200	0
			TRH C10-C40	µg/L	650	<650	84	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	88	73	105	19
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	87	73	105	17
			TRH >C16-C34 (F3)	µg/L	500	<500	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	0	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182006.001	LB152996.023	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	0	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	0	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
			Bromomethane	µg/L	10	<10	0	200	0
			Chloroethane	µg/L	5	<5	0	200	0
			Trichlorofluoromethane	µg/L	1	<1	0	200	0
			Iodomethane	µg/L	5	<5	0	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			Allyl chloride	µg/L	2	<2	0	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Bromochloromethane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	0	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	0	200	0
			Dibromomethane	µg/L	0.5	<0.5	0	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	0	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	0	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	0	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	0	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182006.001	LB152996.023	Halogenated	1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
		Aliphatics	Hexachlorobutadiene	µg/L	0.5	<0.5	0	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	0	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	0	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,4-dichlorobenzene	µg/L	0.3	<0.3	0	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0	200	0
			m/p-xylene	µg/L	1	<1	0	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	0	200	0
			n-propylbenzene	µg/L	0.5	<0.5	0	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	0	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	0	200	0
			n-butylbenzene	µg/L	0.5	<0.5	0	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	0	200	0
			Vinyl acetate	µg/L	10	<10	0	200	0
			MEK (2-butanone)	µg/L	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Sulphonated	Carbon disulfide	µg/L	2	<2	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	5.82	30	6
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	5.69	30	3
			d8-toluene (Surrogate)	µg/L	-	4.6	4.66	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.82	30	4
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	0	200	0
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	0	200	0
SE182006.004	LB152996.024	Monocyclic	Benzene	µg/L	0.5	<0.5	0	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0	200	0
			m/p-xylene	µg/L	1	<1	0	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.1	6	30	17
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	4.92	30	15
			d8-toluene (Surrogate)	µg/L	-	5.5	5.78	30	6
			Bromofluorobenzene (Surrogate)	µg/L	-	5.6	5.3	30	5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182006.001	LB152996.023		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	6.2	5.82	30	7
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.4	5.69	30	11
			d8-toluene (Surrogate)	µg/L	-	4.8	4.66	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	4.7	4.82	30	3

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182006.001	LB152996.023	VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0
SE182006.004	LB152996.024		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.1	6	30	17
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	4.92	30	15
			d8-toluene (Surrogate)	µg/L	-	5.5	5.78	30	6
			Bromofluorobenzene (Surrogate)	µg/L	-	5.6	5.3	30	5
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152934.002		Arsenic, As	µg/L	1	18	20	80 - 120	90
		Cadmium, Cd	µg/L	0.1	16	20	80 - 120	80
		Chromium, Cr	µg/L	1	16	20	80 - 120	80
		Copper, Cu	µg/L	1	17	20	80 - 120	83
		Lead, Pb	µg/L	1	20	20	80 - 120	99
		Nickel, Ni	µg/L	1	16	20	80 - 120	80
		Zinc, Zn	µg/L	5	20	20	80 - 120	98

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152932.002		TRH C10-C14	µg/L	50	1200	1200	60 - 140	102
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	116
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	115
	TRH F Bands	TRH >C10-C16	µg/L	60	1300	1200	60 - 140	105
		TRH >C16-C34 (F3)	µg/L	500	1400	1200	60 - 140	119
		TRH >C34-C40 (F4)	µg/L	500	510	600	60 - 140	84

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152996.002	Halogenated	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	109
	Aliphatics	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	109
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	50	45.45	60 - 140	109
	Halogenated	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	109
	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	99	90.9	60 - 140	109
		o-xylene	µg/L	0.5	50	45.45	60 - 140	109
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.0	5	60 - 140	80
		d8-toluene (Surrogate)	µg/L	-	4.6	5	60 - 140	92
		Bromofluorobenzene (Surrogate)	µg/L	-	5.4	5	60 - 140	108
	Trihalomethan	Chloroform (THM)	µg/L	0.5	49	45.45	60 - 140	109

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB152996.002		TRH C6-C10	µg/L	50	950	946.63	60 - 140	100
		TRH C6-C9	µg/L	40	780	818.71	60 - 140	95
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.7	5	60 - 140	94
		d8-toluene (Surrogate)	µg/L	-	5.3	5	60 - 140	105
		Bromofluorobenzene (Surrogate)	µg/L	-	4.7	5	60 - 140	94
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	640	639.67	60 - 140	100

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181871.001	LB153025.004	Mercury	mg/L	0.0001	0.0071	0.0002	0.008	87

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE181896.008	LB152934.004	Arsenic, As	µg/L	1	19	-0.005	20	94
		Cadmium, Cd	µg/L	0.1	16	0.001	20	80
		Chromium, Cr	µg/L	1	16	-0.012	20	81
		Copper, Cu	µg/L	1	17	0.014	20	85
		Lead, Pb	µg/L	1	20	0.002	20	99
		Nickel, Ni	µg/L	1	16	0.002	20	82
		Zinc, Zn	µg/L	5	21	0.104	20	102

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE182006.005	LB152996.022	Monocyclic	Benzene	µg/L	0.5	<0.5	45.45	98
		Aromatic	Toluene	µg/L	0.5	<0.5	45.45	100
			Ethylbenzene	µg/L	0.5	<0.5	45.45	126
			m/p-xylene	µg/L	1	<1	90.9	118
			o-xylene	µg/L	0.5	<0.5	45.45	115
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.3	-	82
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.7	-	82
			d8-toluene (Surrogate)	µg/L	-	6.0	-	87
			Bromofluorobenzene (Surrogate)	µg/L	-	6.2	-	92

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE182006.005	LB152996.022		TRH C6-C10	µg/L	50	<50	946.63	115
			TRH C6-C9	µg/L	40	<40	818.71	109
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.3	-	82
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.7	-	82
			d8-toluene (Surrogate)	µg/L	-	6.0	-	87
			Bromofluorobenzene (Surrogate)	µg/L	-	6.2	-	92
		VPH F	Benzene (F0)	µg/L	0.5	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	122

MATRIX SPIKE DUPLICATES

SE181953 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1822132**	Page	: 1 of 5
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CLEMENT JOYNER	Contact	: Brenda Hong
Address	: ABN: 80 078 004 798 GPO BOX 5394 SYDNEY NSW, AUSTRALIA 2001	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: PS109581	Date Samples Received	: 26-Jul-2018 16:15
Order number	:	Date Analysis Commenced	: 30-Jul-2018
C-O-C number	: ----	Issue Date	: 01-Aug-2018 15:31
Sampler	: ----		
Site	: ----		
Quote number	: EN/008/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, 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.

- EP071: Results of sample QA01A have been confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA01A	----	----	----	----
				Client sampling date / time	20-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1822132-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**7.9**	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**330**	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**170**	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**500**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		**200**	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**290**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA01A	----	----	----	----
				Client sampling date / time	20-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1822132-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		**150**	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**640**	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**200**	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**77.9**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**78.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.3**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**90.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**85.7**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**78.2**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**119**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**114**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**105**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) 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

QUALITY CONTROL REPORT

Work Order	: **ES1822132**	Page	: 1 of 6
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CLEMENT JOYNER	Contact	: Brenda Hong
Address	: ABN: 80 078 004 798 GPO BOX 5394 SYDNEY NSW, AUSTRALIA 2001	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: PS109581	Date Samples Received	: 26-Jul-2018
Order number	:	Date Analysis Commenced	: 30-Jul-2018
C-O-C number	: ----	Issue Date	: 01-Aug-2018
Sampler	: ----		
Site	: ----		
Quote number	: EN/008/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1837641)									
ES1822122-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.6	11.9	2.20	0% - 20%
ES1822169-002	Anonymous	EA055: Moisture Content	----	0.1	%	2.2	3.5	45.5	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1837022)									
ES1822065-061	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES1822115-005	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

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: 1837022) - continued									
ES1822115-005	Anonymous	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	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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: 1836486)									
ES1822115-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1822169-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1837021)									
ES1822065-061	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1822115-005	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1836486)									
ES1822115-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1822169-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1837021)									
ES1822065-061	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1822115-005	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1836486)									

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: 1836486) - continued									
ES1822115-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES1822169-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1837022)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	119	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	118	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	112	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	117	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	118	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	120	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	122	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	120	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	106	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	111	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.1	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	105	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	113	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	116	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	117	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	114	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1836486)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	111	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1837021)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	85.2	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	90.4	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	102	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1836486)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	118	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1837021)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	87.0	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.7	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	118	63	131
EP080: BTEXN (QCLot: 1836486)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	110	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	65	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1836486) - continued								
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	105	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	107	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	103	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1837022)							
ES1822065-061	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	99.9	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	117	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1836486)							
ES1822115-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	101	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1837021)							
ES1822065-061	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	85.7	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	96.8	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	108	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1836486)							
ES1822115-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	94.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1837021)							
ES1822065-061	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	95.0	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	96.6	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	119	52	132
EP080: BTEXN (QCLot: 1836486)							
ES1822115-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	93.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	91.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	94.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	92.2	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	92.4	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	71.6	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1822132**	Page	: 1 of 4
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CLEMENT JOYNER	Telephone	: (02) 8784 8504
Project	: PS109581	Date Samples Received	: 26-Jul-2018
Site	: ----	Issue Date	: 01-Aug-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
QA01A	**20-Jul-2018**	**----**	----	----	**30-Jul-2018**	03-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**31-Jul-2018**	08-Sep-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**30-Jul-2018**	03-Aug-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**31-Jul-2018**	08-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**30-Jul-2018**	03-Aug-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**31-Jul-2018**	08-Sep-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QA01A	**20-Jul-2018**	**30-Jul-2018**	03-Aug-2018	✓	**30-Jul-2018**	03-Aug-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**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).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
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.