

SYDNEY WATER

DETAILED SITE INVESTIGATION

PITT TOWN

JUNE 2021



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Detailed Site Investigation

Pitt Town

Sydney Water

WSP

Level 27, 680 George Street

Sydney NSW 2000

GPO Box 5394


Sydney NSW 2001

Tel: +61 2 9272 5100

Fax: +61 2 9272 5101

wsp.com

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Prepared by:	Claire Williamson/Bianca Underwood/ Imogen Powell	17/06/2021	
Reviewed by:	Amy Valentine	17/06/2021	
Approved by:	Amy Valentine	17/06/2021	

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ABBREVIATIONS

ABC	Ambient background concentration
ACL	Added contaminant limit
ACM	Asbestos containing material
BTEX compounds	Benzene, toluene, ethylbenzene and xylene
CEC	Cation exchange capacity
CSM	Conceptual site model
DP	Deposited Plan
DQI	Data quality indicator
DQO	Data quality objective
DSI	Detailed site investigation
EIL	Ecological investigation level
ESL	Ecological screening level
F1	TRH C ₆ -C ₁₀ minus BTEX compounds
F2	TRH >C ₁₀ -C ₁₆ minus naphthalene
HIL	Health investigation level
HSL	Health screening level
LEP	Local environmental plan
LGA	Local government area
mAHD	Metres Australian Height Datum
mBGL	Metres below ground level
NATA	National Association of Testing Authorities
NEPM	<i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> (as amended 2013)
NL	Non-limiting
NSW EPA	New South Wales Environment Protection Authority
OCPs	Organochlorine pesticides
OPPs	Organophosphate pesticides
PAHs	Polycyclic aromatic hydrocarbons

PCBs	Polychlorinated biphenyls
PID	Photo-ionisation detector
PQL	Practical quantitation limit
QA/QC	Quality assurance/quality control
RPD	Relative percentage difference
SOP	Standard operating procedure
TCLP	Toxicity characteristic leachate procedure
TEQ	Toxicity equivalent quotient
TRH	Total recoverable hydrocarbons
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

INTRODUCTION AND OBJECTIVES

WSP Australia Pty Ltd (WSP) was commissioned by Sydney Water Corporation (Sydney Water) to undertake a detailed site investigation (DSI) at Sydney Water-owned land located at 4 Hall Street, Pitt Town ('the site'). The purpose of the DSI was to provide a more detailed understanding of potential contamination at the site to determine the potential risk to human health and ecological receptors for the current and proposed future land use and consider further assessment, management or remediation options (if required).

The objectives of the investigation were to:

- assess the site's suitability for the current and proposed land use using adopted assessment criteria for human health and ecological protection;
- provide advice regarding the NSW Environment Protection Authority (EPA) duty to report contamination, if applicable;
- provide a preliminary waste classification of material identified at the site in accordance with the NSW EPA (2014) *Waste classification guidelines*;
- if the site is found to be unsuitable for the current and/or proposed land uses, provide recommendations that will enable the site to be made suitable; and
- provide a volume estimate for any material that must be removed or managed to achieve suitability for the current and/or proposed land use, if applicable.

The site is located within Hawkesbury local government area and is zoned 'Zone SP2 Infrastructure' under the *Hawkesbury Local Environmental Plan 2012*.

SUMMARY OF SITE HISTORY

The site was undeveloped from at least the 1940s with the exception of two aboveground reservoirs located in the north-eastern portion of the site. The reservoirs may have been constructed on-site. This infrastructure, with the exception of an underground concrete plinth, was removed in August 2020. WSP understands that remediation works were undertaken to remove lead paint flecks from the site surface although this work was not documented. The surrounding land has comprised agricultural use and, more recently, low-density residential use.

SCOPE OF WORK

The scope of work for the DSI comprised:

- undertaking soil investigations including:
 - excavation of 10 test pits (TP01 to TP10), using an excavator, to depths of between 1.0 and 2.0 metres below ground level (mBGL) and collection of soil samples from all test pit locations;
 - collection of six surface soil samples (SS_01 to SS_06), using hand tools, to depths of 0.1 mBGL from adjacent to the eastern site boundary;
 - collection of four stockpile samples (STP01_01 to STP01_04), using hand tools, from the stockpile located adjacent to the northern site boundary for waste classification purposes; and

- excavation of an additional four test pits (OBS_01 to OBS_04) to observe and log the fill material at these locations to depths of 0.7 mBGL, with no soil samples collected.
- laboratory analysis of selected representative soil samples for the contaminants of concern identified at the site
- preparation of this DSI report which focuses on assessing the soil contamination status of the site, use of this soil data to assess the likelihood of contamination within groundwater and vapour, evaluating the suitability of the site for the current and continued future land uses and assessing the need for further assessment, management or remediation at the site (if required).

Selected representative soil samples were collected and analysed for contaminants of concern comprising total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos (by quantitative method).

RESULTS AND CONCLUSIONS

The results of the investigation indicated the following:

- All results for BTEX compounds, OCPs, OPPs, PCBs were below the laboratory practical quantitation limits (PQLs), and therefore were below the adopted human health and ecological criteria for the site.
- Samples from the stockpiled soil contained low concentrations of heavy metals, fluoranthene and pyrene above the PQLs but below the low density residential assessment criteria. However, because the stockpile was sourced from the surface remediation of paint flecks it is recommended that it is disposed of off site.
- Concentrations of heavy metals were above the PQLs in all samples tested, with the exception of cadmium and mercury where all samples were below PQLs. The majority of the concentrations are considered to be representative of background heavy metal concentrations, although two samples had elevated lead and one of them also had elevated zinc, indicating that paint flakes are potentially present. All results were below the adopted health and ecological criteria for residential soils.
- Asbestos-containing material (ACM) was identified within a soil sample collected from a depth of 0.0 to 0.1 mBGL at TP05 and was also identified lying on the site surface at surface at sampling location SS_06. These exceedances were removed during the sampling process. The topsoil and site surface at sampling location TP05 was not observed to be different to any other location and it is considered likely the fragment may have been embedded in the subsurface after weathering of the site surface. Both fragments are an exceedance of the health screening level for surface soil (of no visible asbestos).
- A preliminary in situ waste classification was undertaken based on the laboratory results of soil samples collected from the site. Concentrations of all analytes were below the thresholds for general solid waste in all samples. The soil at the site is indicatively classified as general solid waste, based on the assumption that ACM is not present in the subsurface. If materials are excavated additional sampling is required to confirm waste classification prior to disposing of materials to an off-site waste facility. The stockpiled soil is also classified as general solid waste.
- No duty to report contamination to the NSW EPA was identified.

Based on these results, the site meets the adopted screening/investigations levels for the current open space and proposed residential land use, however, it is recommended that an emu pick of the site surface be undertaken before the site is divested to clear the site surface of ACM fragments.

1 INTRODUCTION

1.1 BACKGROUND

WSP Australia Pty Ltd (WSP) was commissioned by Sydney Water Corporation (Sydney Water) to undertake a detailed site investigation (DSI) at Sydney Water-owned land located at 4 Hall Street, Pitt Town ('the site'). The location and boundaries of the site are shown on Figure 1 in Appendix A.

The purpose of the DSI was to undertake an assessment of suitability at the site and provide recommendations for remediation to achieve the desired end use (low density residential), if not deemed suitable in its current state.

The site is zoned 'Zone SP2: Infrastructure' under the *Hawkesbury Local Environmental Plan 2012* (LEP, 2012).

1.2 OBJECTIVES

The objectives of the investigation were to:

- assess the site's suitability for the current and/or proposed land use using adopted assessment criteria for human health and ecological protection;
- provide advice regarding the NSW Environment Protection Authority (EPA) duty to report contamination, if applicable;
- provide a preliminary waste classification of material identified at the site in accordance with the NSW EPA (2014) *Waste classification guidelines*;
- if the site is found to be unsuitable for the current and/or proposed land uses, provide recommendations that will enable the site to be made suitable; and
- provide a volume estimate for any material that must be removed to achieve suitability for the current and/or proposed land use, if applicable.

2 SCOPE OF WORK

A desktop review of current and historical background information pertaining to the site has been undertaken in order to establish whether there were any known environmental concerns associated with the site. The DSI work was then undertaken utilising this information; the findings of the desktop review are provided in Section 4 of this report.

The scope of work for the DSI comprised:

- undertaking soil investigations including:
 - excavation of 10 test pits (TP01 to TP10), using an excavator, to depths of between 1.0 and 2.0 metres below ground level (mBGL) and collection of soil samples from all test pit locations;
 - collection of six surface soil samples (SS_01 to SS_06), using hand tools, to depths of 0.1 mBGL from adjacent to the eastern site boundary;
 - collection of four stockpile samples (STP01_01 to STP01_04), using hand tools, from the stockpile located adjacent to the northern site boundary for waste classification purposes; and
 - excavation of an additional four test pits (OBS_01 to OBS_04) to observe and log the fill material at these locations to depths of 0.7 mBGL, with no soil samples collected.
- laboratory analysis of selected representative soil samples for the contaminants of concern identified at the site; and
- preparation of this DSI report which focuses on assessing the soil contamination status of the site, use of this soil data to assess the likelihood of contamination within groundwater and vapour, evaluating the suitability of the site for the current (open space) and/or proposed future (low density residential) land uses and assessing the need for further assessment, management or remediation at the site (if required).

3 SITE LOCATION AND SETTING

3.1 SITE LOCATION AND IDENTIFICATION

The general site identification details are provided in Table 3.1.

Table 3.1 Summary of general site information

Site address	4 Hall Street Pitt Town, NSW 2756
Sydney Water site ID	LT000925
Site identification	Lot 1 in DP 89958
Site area	Approximately 3,682 m ²
Current site use	Vacant grassed land
Surrounding land uses	The site is surrounded by low density residential land use in all directions. Hall Street is located immediately to the north of the site and Bathurst Street is located immediately to the west of the site with low density residential land use beyond.
Local government area (LGA) and zoning	The site is located within Hawkesbury LGA and is zoned 'Zone SP2 Infrastructure' under the Hawkesbury LEP (2012).
Proposed site use	Sydney Water has indicated that the Sydney Water property is proposed to be divested for low density residential use.

3.2 SITE INSPECTION

The site was inspected on 29 March 2021 by a WSP environmental scientist. The site is accessible via a locked gate off Hall Street.

The site comprises vacant grassed land. There was a slight indent in the ground visible in the former aboveground reservoir location. A stockpile of approximately 20 m³ was located adjacent to the centre of the northern site boundary. The stockpile was placed on, as well as covered with, black plastic sheeting and was surrounded by a temporary fence. The stockpile is labelled with a sign indicating lead removal works are being undertaken and the source of the stockpile is assumed to be from surface scrapes following the removal of the aboveground reservoir, to remove potential lead paint flakes from the former reservoir footprint.

No visual or olfactory signs of contamination were noted.

An aerial plan showing the site features is presented as Figure 1 in Appendix A and site photographs are provided in Appendix B.

3.3 TOPOGRAPHY AND SURFACE WATER DRAINAGE

The site is situated at approximately 27 mAHD. The surrounding topography slopes generally down towards the west to Bathurst Street. Local topography slopes down towards the north-west to Punt Street.

The nearest surface water body to the site is an unnamed dam located approximately 300 m north-west of the site followed by the Hawkesbury River, located approximately 570 m north of the site. The Hawkesbury River is considered to be in a downgradient direction from the site.

3.4 GEOLOGY

The regional geological map of the area (Geological Survey of New South Wales, 1991, Penrith 1:100,000 Geological Series Sheet 9030 (Edition 1)) indicates that the site is underlain by Pitt Town Sand comprising quartz sand (reddish brown iron oxide coated, clay and minor pebbles).

The Australian Soil Resource Information System (ASRIS; <https://www.asris.csiro.au/>) indicated that soils underlying the site are mapped as having a low probability of occurrence of acid sulfate soils.

3.5 HYDROGEOLOGY

A review of the licensed borehole register on the NSW Government Water Information website (<https://realtime.data.waternsw.com.au/water.stm>) indicated that there were no registered groundwater bores within a 1 km radius of the site.

4 SITE HISTORY REVIEW

A review of background information pertaining to the site was undertaken to identify any known or likely environmental concerns. A summary of the review undertaken is provided in Table 4.1

Table 4.1 Summary of background data

SEARCH	RESULTS
Historical aerial photographs	<p>WSP was provided with Sydney Water's Contaminated Land Risk Ranking (CLRR) tool output and WebGIS program and this information has been summarised from that output. Historical aerial photographs were reviewed along with the current photograph.</p> <p>In the 1940s aerial photograph, the site appeared to be vacant and grass covered. The surrounding land use appeared to be agricultural. The site remained largely unchanged in the 1950s aerial photograph. The residential building immediately to the east of the site had been constructed and tree plantations/orchards were visible to the north and south of the site and in the surrounding area. In the 1960s aerial photograph the smaller reservoir was visible in site, located adjacent to the eastern site boundary. The rest of the site remained undeveloped. The surrounding land use remained largely unchanged. The larger reservoir was visible in the 1970s aerial photograph. A residential property had been constructed to the south of the site and the tree plantations/orchards had matured. The site and surrounds remained largely unchanged in the 1980, 1990 and 2000s aerial photographs with the exception of increased low-density residential development in the area and clearing of the trees to the north of the site in the 1990s followed by clearing of all of the trees by the 2000s. Glengary Place to the north of the site is first visible in 2016 and residential development is visible on Glengary Place from 2016 to 2020. The reservoirs are no longer visible in the December 2020 aerial photograph, although the stockpile currently stored on-site is visible. The rest of the site remains unchanged.</p>
EPA online notice records	<p>Online searches of the NSW EPA <i>Protection of the Environment Operations Act 1997</i> public register (http://www.epa.nsw.gov.au/prpoeoapp/) and the NSW EPA contaminated land record database (http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx) indicated that no licences or notices were on record for the site or other properties in the vicinity of the site.</p>
Sydney Water records	<p>According to the Sydney Water online list of heritage assets (http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/Heritage-search/index.htm), there are no heritage assets on-site.</p>

4.1 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

WSP were provided with one previous investigation report for the site; ADE 2018, *Demolition survey report*, WS0243, Hall Street, Pitt Town NSW, dated 12 February 2018.

The historical pre-demolition report provided (ADE, 2018) indicates that lead paint was used on the water storage reservoirs and associated infrastructure, and asbestos was identified on the exterior of one of the reservoirs. Following demolition, undocumented works were undertaken to emu pick paint flakes and limited soil scrapes were also undertaken.

Information provided by Sydney Water indicated that some small stockpiles of soil remain on-site from these works, which corresponds with the soil stockpiled on black plastic that was noted on-site. Sydney Water information also indicated that the concrete plinth for the larger reservoir is still located on site at a depth of approximately 2.5 mBGL.

During the DSI works Sydney Water provided information indicating that the historical reservoirs had likely been constructed on-site and during this assembly (which Sydney Water indicated would have taken around 6 months to

complete) concrete, bitumen and red lead paint were used in the construction process and activities undertaken would have comprised welding and heating, including use of a coal fired bitumen melting pot and a generator. Diesel and oil would have been expected to be used and potentially stored on-site during this time.

4.2 SUMMARY OF SITE BACKGROUND

The site was undeveloped from at least the 1940s with the exception of two aboveground reservoirs located in the north-eastern portion of the site. This infrastructure may have been constructed on-site. This infrastructure, with the exception of an underground concrete plinth, was removed in August 2020. WSP understands that remediation works were undertaken to remove lead paint flecks from the site surface and this work was not documented. The surrounding land has comprised agricultural use and, more recently, low-density residential use.

4.3 PRELIMINARY CONCEPTUAL SITE MODEL

Based on the site inspection and the desktop review of site setting and historical land use information, a preliminary CSM was prepared. This is summarised in Table 4.2.

Table 4.2 Preliminary CSM

Likely sources of impact	<p>Likely sources of impact at the site include:</p> <ul style="list-style-type: none">— uncontrolled fill materials (potentially historically used to fill the site during construction of the reservoirs);— leaks and spills from machinery/materials stored on-site during construction of the reservoirs;— historical illegal waste dumping; waste that may have been dumped on the site prior to access being restricted by fencing; and— pesticides used historically and recently to maintain the site and the adjacent orchards.
Potentially impacted media	<p>Soil: Chemical contamination and asbestos-containing material (ACM) from contaminated fill, waste materials from adjacent residential properties, or from pesticides used on-site.</p> <p>Groundwater: Migration from soil impacts, although this is considered unlikely given that there is low likelihood of widespread soil contamination at the site.</p>
Contaminants of concern	<p>Contaminants of concern at the site comprise:</p> <ul style="list-style-type: none">— petroleum compounds including total recoverable hydrocarbons (TRH) and benzene, toluene, ethylbenzene and xylene (BTEX compounds);— polycyclic aromatic hydrocarbons (PAHs);— heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);— organochlorine and organophosphate pesticides (OCPs/OPPs);— polychlorinated biphenyls (PCBs); and— asbestos.

Migration pathways	<p>Potential migration pathways include:</p> <ul style="list-style-type: none"> — vertical migration of contaminants in soil from infiltration of rainwater; — lateral migration of impacted groundwater; — migration of contaminants through underground service trenches; — run-off of surface contaminants in rainwater; — volatilisation of hydrocarbon contamination; and — airborne migration of contamination in dust or as fibres or vapour.
Potential exposure pathways	<p>Potential exposure pathways include:</p> <ul style="list-style-type: none"> — inhalation of dust, fibres or vapours by site users or nearby site users; — ingestion or dermal contact with contaminated surface soils or near surface soils by open space site users or excavation/maintenance workers; and — ingestion or dermal contact with contaminated water downgradient of the site through the use of downgradient surface water bodies for recreation.
Potential sensitive receptors	<p>Based on the site setting, sensitive receptors potentially include:</p> <ul style="list-style-type: none"> — underlying soil and groundwater; — future residential users of the site; — surface watercourses potentially receive groundwater and surface run off from the site; — occupiers of residential properties surrounding and downgradient of the site; and — on-site and off-site construction or utility workers (those working within service pit trenches).

5 DATA QUALITY OBJECTIVES

Systematic planning is critical to successful implementation of an environmental assessment and is used to define the type, quantity and quality of data needed to inform decisions. The United States Environmental Protection Agency has defined a process for establishing data quality objectives (DQOs), which has been referenced in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM, as amended 2013).

DQOs ensure that:

- the study objectives are set;
- appropriate types of data are collected (based on contemporary land use and chemicals of concern); and
- the tolerance levels are set for potential decision-making errors.

The DQO process is a seven-step iterative planning approach. The outputs of the DQO process are qualitative and quantitative statements which are developed in the first six steps. They define the purpose of the data collection effort, clarify what the data should represent to satisfy this purpose and specify the performance requirements for the quality of information to be obtained from the data. The output from the first six steps is then used in the seventh step to develop the data collection design that meets all performance criteria and other design requirements and constraints. The DQO process adopted for the Stage 2 DSI works is outlined in Table 5.1.

Table 5.1 DQO process

STEP	DESCRIPTION	OUTCOMES
1	State the problem	Sydney Water plan to divest the site for low density residential use. The purpose of the DSI is to assess the contamination status of soils beneath the site and, using soil data, assess the need for further groundwater and/or vapour assessment and draw conclusions about the site suitability.
2	Identify the decisions/goal of the investigation	The decisions to be made based on the results of the investigation are as follows: <ul style="list-style-type: none"> — Has the soil been adequately sampled? — Were all the contaminants of concern analysed? — Is there sufficient data to prepare the DSI report? — Is there a risk to current and/or future users or occupiers of the site?
3	Identify the inputs to the decision	The inputs required to make the above decisions are as follows: <ul style="list-style-type: none"> — geological data; — concentrations of contaminants of concern in soil; — site assessment criteria for soil (outlined in Section 7); — observation data including presence of odours and discoloration of the soil; and — distribution of identified soil contamination.
4	Define the study boundaries/constraints on data	The boundaries of the investigation have been identified as follows: <ul style="list-style-type: none"> — Spatial boundaries: the spatial boundary of the investigation area is defined as the site layout presented on Figure 1 to the maximum investigation depth of 2.0 mBGL. The potential receptors of concern were considered by the study but are not included in the defined study area. — Temporal boundaries: the date of the project inception (March 2021) to the completion of the fieldwork under the proposed investigation (April 2021).

STEP	DESCRIPTION	OUTCOMES
5	Develop a decision rule	<p>The purpose of this step is to define the parameters of interest, specify the action levels and combine the outputs of the previous DQO steps into an 'if...then...' decision rule that defines the conditions that would cause the decision maker to choose alternative actions.</p> <p>The parameters of interest are concentrations of contaminants of concern (metals, pesticides, asbestos, PCBs and hydrocarbons) in soil. An assessment of the concentrations of the contaminants of concern was proposed to be undertaken to assess the suitability for the current and future land use.</p> <p>Should concentrations exceed the adopted assessment criteria, further assessment, management and remedial options will be considered.</p>
6	Specify limits on decision errors	<p>The acceptable limits on decision errors to be applied in the investigation and the manner of addressing possible decision errors have been developed based on the data quality indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness and are presented in Table 5.2 and 5.3.</p>
7	Optimise the design for obtaining data	<p>The purpose of this step is to identify a resource-effective data collection design for generating data that satisfies the DQOs.</p> <p>This assessment has been designed considering the information and data obtained during the desktop assessment and site inspection (Sections 3 to 4). The resource effective data collection design that is expected to satisfy the DQOs is described in detail in Section 6 (methodology).</p> <p>To ensure the design satisfies the DQOs, DQIs (for accuracy, comparability, completeness, precision and reproducibility) have been established to set acceptance limits on field methodologies and laboratory data collected.</p>

DQIs for sampling techniques and laboratory analyses of collected soil samples define the acceptable level of error for this validation assessment. The adopted field methodologies and data obtained have been assessed by reference to DQIs as follows:

- 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 each media present on the site;
- 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 a percentage) from a data collection activity.

A summary of the field and laboratory DQIs for the validation assessment are provided in Tables 5.2 and 5.3.

Table 5.2 DQIs for field techniques

DQI
Precision
Standard operating procedures (SOPs) appropriate and complied with
Collection of inter-laboratory and intra-laboratory duplicates
Accuracy
WSP SOPs appropriate and complied with
Collection of field and trip blanks and trip spikes
Representativeness
Appropriate media sampled
Comparability
Same SOPs used on each occasion
Experienced sampler
Climatic conditions (temperature, rainfall, wind) considered
Same type of samples collected
Completeness
SOPs appropriate and complied with
All required samples collected

Table 5.3 DQIs for laboratory analysis

DQI	ACCEPTABLE LIMITS
Precision	
Analysis of laboratory duplicates for PAHs, TRH, BTEX and total metals in soil	>10 x practical quantitation limit (PQL) - 30% relative per cent difference (RPD) <10 x PQL - 50% RPD
National Association of Testing Authorities (NATA) certified laboratories	NATA accreditation for analyses performed
Accuracy	
Analysis of laboratory prepared trip blanks (one per batch)	Below PQLs for contaminants analysed
Analysis of rinsate blanks (one per day)	Below PQLs for contaminants analysed
Analysis of laboratory blanks	Below PQLs for contaminants analysed
Analysis of laboratory matrix spikes, laboratory control samples and surrogate recoveries	70-130% inorganics/metals 60-140% organics 10-40% semi-volatile organic compounds

DQI	ACCEPTABLE LIMITS
Analysis of laboratory duplicates for PAHs, TRH, BTEX and total metals in soil	30% RPD
Representativeness	
All required samples analysed	As per Section 6
Comparability	
Sample analytical methods used (including clean-up)	As per NEPM (2013)
Same units	Justify/quantify if different
Same laboratories	Justify/quantify if different
Sample PQLs	Less than nominated criteria
Completeness	
All critical samples analysed	As per Section 6
All required analytes analysed	As per Section 6
Appropriate methods and PQLs	As per NEPM (2013)
Sample documentation complete	
Sample holding times complied with	

6 SAMPLING AND ANALYSIS PROGRAM

6.1 SAMPLING RATIONALE

A sampling plan, comprising grid-based locations, was adopted to sufficiently assess the triangular shape of the site.

Ten sample locations were completed, which were primarily grid-based test pits. Lead concentration readings were collected from the site surface using a hand-held X-ray fluorescence (XRF) machine with the intention of targeting test pits to areas with elevated concentrations. An elevated reading was noted at the proposed TP07 location and not across the remainder of the site and so no sampling locations were moved to target potential lead hotspots. This number of sample locations meets the number of sampling points recommended for site characterisation based on detecting circular hot spots by using a grid-spaced sampling pattern in NSW EPA (1995) *Sampling Design Guidelines*.

An additional four observation test pits were also excavated in order to visually assess the subsurface for buried fill or potential by-products of the historical reservoir construction. Six surface samples were also collected along the eastern boundary of the site for analysis of pesticides as tree plantations/orchard were observed to have been located on neighbouring properties in the historical aerial photographs. Four samples were collected from the stockpile located adjacent to the northern boundary, which comprises surface soil material scraped during remediation of the lead paint on the site surface, for waste classification purposes.

An excavator was used to undertake excavation of test pits to a maximum depth of 2.0 mBGL, or 0.5 m into natural underlying soil, whichever occurred first. This method was chosen to facilitate a thorough visual inspection of subsurface materials. The sample locations are shown on Figure 1.

No groundwater assessment was proposed to be undertaken as part of the DSI. Based on the elevation of the site, the local topography and site geology, groundwater is considered likely to be present within the underlying bedrock. The likelihood for groundwater contamination was considered to be low given that widespread soil contamination was unlikely. It was therefore considered appropriate to investigate soil contamination during the DSI, with the understanding that groundwater investigation may need to be considered at a later stage (either prior to or during any remediation works) should significant soil contamination be identified at the site.

6.2 FIELDWORK

6.2.1 PRELIMINARIES – SERVICE LOCATION

A desktop search for underground services using the ‘Dial Before You Dig’ service was undertaken prior to intrusive investigations. Sampling locations were cleared prior to the commencement of intrusive works by an experienced service locator. The service locator was provided with information/plans from the relevant asset owners and site-specific plans from Sydney Water. In addition, a toothless bucket was used to undertake 50 mm surface scrapes and test pit scrapes for all test pit locations to reduce the risk of damage to subsurface infrastructure.

6.2.2 INTRUSIVE INVESTIGATION WORKS AND SOIL SAMPLING

Following the clearing of locations, intrusive investigation works were undertaken at the site on 14 April 2021. An excavator equipped with a batter bucket was used to advance 14 test pits to a maximum depth of 2.0 mBGL under the supervision of a WSP environmental scientist.

Soil samples in test pits TP01 to TP10 were collected from the surface (0.0-0.1 mBGL), 0.3-0.5 mBGL and every metre thereafter or where changes in lithology or evidence of contamination were observed. A duplicate sample was also collected in a laboratory issued zip lock bag and was screened with a photo-ionisation detector (PID) to analyse for

volatile organic compounds (VOCs). The PID was calibrated at the beginning of the day of field works, using fresh air and 100 ppm isobutylene calibration standard. PID readings were used to aid in selecting soil samples for laboratory analysis.

Subsurface conditions were logged by an experienced environmental scientist. Soil samples were placed in 250 mL jars, leaving minimal headspace, and closed using Teflon-coated lids. Samples were collected in plastic bags to be screened for asbestos presence or absence. Samples were stored on ice in an esky and transported to the laboratory under chain of custody.

For collection of samples for asbestos analysis, the sampling methodology outlined in the WA Department of Health (DoH) 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* was adopted, as referenced by the NEPM (2013). For ACM and friable asbestos (FA) 10 L samples were collected and screened manually on-site through a ≤ 7 mm sieve. Any ACM/FA retained on the sieve (i.e. > 7 mm in size) was bagged and sent to the primary laboratory for analysis. For asbestos fines (AF) a separate sample of approximately 500 mL was collected in a bag. These entire samples were sent to the laboratory for sieving and gravimetric determination of asbestos (< 7 mm).

Dedicated disposable nitrile gloves were worn for each sampling episode to minimise the potential for cross-contamination. Sample containers were filled completely prior to being stored in an ice cooled esky and transported to the laboratory with the samples.

An XRF meter was used to screen the site surface for potential lead paint flakes that may have remained after the remediation works, to target test pit locations.

A hand-held GPS unit was used to record the coordinates of each sampling location.

6.2.3 WASTE CLASSIFICATION SAMPLING

Stockpile sampling was also undertaken on 14 April 2021. Four samples (STP01 to STP04) were collected from the stockpile on-site by hand. Samples were collected as per Section 6.2.2 and transported to the laboratory in an ice cooled esky.

6.3 LABORATORY ANALYSIS

Selected soil samples collected were submitted to the primary analytical laboratory for analysis for contaminants of concern at the site. Soil samples were selected based on a combination of sample location and field observations, including PID results.

Primary samples and intra-laboratory samples were analysed by Eurofins Pty Ltd (Eurofins), with inter-laboratory duplicate samples analysed by SGS Australia Pty Ltd (SGS). Both laboratories are accredited by NATA for the analytical suites requested, with the exception of asbestos quantification for which there is no accreditation.

Table 6.1 provides a summary of the laboratory analytical schedule for soil samples for the DSI.

Table 6.1 Laboratory sampling and analysis plan

ANALYTE	PRIMARY SAMPLES			DUPLICATES/ TRIPLICATES	FIELD BLANK	TRIP BLANK
	TEST PITTING	STOCKPILE SAMPLING	SURFACE SAMPLES			
TRH	15	4	-	1	1	1
BTEX compounds	15	4	-	1	1	1
PAHs	15	4	-	1	1	-
8 heavy metals	15	4	-	1	1	-
OCPs/OPPs	15	4	6	1	1	-
PCBs	15	4	-	1	1	-
Asbestos (quantitative)	13	5	-	-	-	-
pH	1	-	-	-	-	-
Clay content	1	-	-	-	-	-

Notes:

TRH	Total recoverable hydrocarbons
BTEX compounds	Benzene, toluene, ethylbenzene and xylene
PAHs	Polycyclic aromatic hydrocarbons
8 heavy metals	Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc
OCPs/OPPs	Organochlorine pesticides/organophosphate pesticides
PCBs	Polychlorinated biphenyls

7 SOIL ASSESSMENT CRITERIA

The assessment criteria for the investigation have been based on an analysis of land uses and potential receptors. Based on this, assessment criteria provided in the following guidelines have been identified as being applicable for assessing laboratory analytical data:

- NEPM (2013); and
- Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) *Technical Report No. 10 Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, Part 2: Application Document* (Friebel & Nadebaum, 2011).

7.1 HEALTH INVESTIGATION LEVELS AND HEALTH SCREENING LEVELS

To assess the presence and extent of soil contamination at a site, the NSW EPA refers to the NEPM (2013) which provides health investigation levels (HILs) and health screening levels (HSLs) for the assessment of impacted soil.

HILs provide an assessment of potential risk to human health from chronic exposure to contaminants, and have been developed based on land use setting. As the purpose of this investigation is to assess the site against the current land use, the “HIL C” criteria for open space (noting that the site is locked and not currently publicly accessible) and ‘HIL A’ criteria for the proposed low density residential land have been adopted.

HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the vapour intrusion and inhalation pathway. The HSLs depend on specific soil physicochemical properties and land use scenarios. They apply to different soil types and depths. For the purpose of this investigation, the “HSL C” criteria for open space and ‘HSL A’ criteria for low density residential land use have been adopted.

A clay content analysis was undertaken at one location on site. Analysis of a residual soil sample collected from 2.0 mBGL at location TP10 indicated that clay content was 6%. Based on this and the site observations, HSLs have been adopted based on a subsurface comprising of sand.

HSLs are also provided for asbestos contamination in soil, for bonded ACM, FA and AF. As per the WA DoH (2009) guidelines, a 10 L sample is collected and screened manually on-site through a ≤ 7 mm sieve or spread out for inspection on a contrasting material for visual inspection. Any ACM/FA retained on the sieve (i.e. >7 mm in size) is then analysed in the laboratory for bonded ACM, with results quantified in per cent weight by weight (%w/w). For FA/AF a separate sample of approximately 500 mL is collected, sieved in the laboratory and gravimetric determination of asbestos (<7 mm) undertaken. The results are then compared to the NEPM HSLs. If the HSLs are not exceeded then no contamination management options are required provided the surface soil is free of visual asbestos. If results exceed the HSLs, further assessment, management and/or remediation is required.

The HSL for friable asbestos and asbestos fines (FA/AF) provided in the NEPM (2013) is 0.001% for all land use types. Current Australian methodologies for asbestos quantification, as outlined in Australian Standard AS4964 2004, *Method for Qualitative Identification of Asbestos in Bulk Samples*, indicate that the presence or absence of free (i.e. respirable) asbestos fibres can be determined with a PQL of 0.01%, an order of magnitude greater than the HSL. It is noted that laboratories typically report with a PQL of 0.001% for FA/AF, however due to the limitations with the method adopted it is possible that free respirable asbestos fibre contamination exists in samples at concentrations up to an order of magnitude greater than the reported detection limit. In the absence of a methodology with a more appropriate PQL, it is considered appropriate to compare analytical results obtained against the HSL, taking into consideration the limitations inherent in the method.

The CRC CARE Technical Report No. 10 (Friebel & Nadebaum, 2011) provides HSLs for petroleum hydrocarbons specifically for vapour inhalation for intrusive maintenance workers in shallow trenches, and for direct contact. These have also been adopted. The health-based criteria for this investigation is summarised in Table 7.1.

The most conservative criteria for low density residential end use are presented in Table 1 in Appendix B.

Table 7.1 Soil assessment criteria – HILs/HSLs

ANALYTE	LOW DENSITY RESIDENTIAL LAND USE						PUBLIC OPEN SPACE LAND USE						MAINTENANCE/EXCAVATION WORKERS			
	HSL A/B (IN SAND) ¹ (mg/kg)				HIL A ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)	HSL C (IN SAND) ¹ (mg/kg)				HIL C ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)	HSLs (IN SAND) ⁴ (mg/kg)			DIRECT CONTACT ³ (mg/kg)
	0 TO <1 m	1 TO <2 m	2 TO <4 m	4 m +			0 TO <1 m	1 TO <2 m	2 TO <4 m	4 m +			0 TO <2 m	2 TO <4 m	4 m +	
TRH/BTEX compounds																
TRH C ₆ -C ₁₀	-	-	-	-	-	4,400	-	-	-	-	-	5,100	NL	NL	NL	82,000
TRH C ₆ -C ₁₀ minus BTEX (F1)	45	70	110	200	-	-	NL	NL	NL	NL	-	-	-	-	-	-
TRH >C ₁₀ -C ₁₆	-	-	-	-	-	3,300	-	-	-	-	-	3,800	NL	NL	NL	62,000
TRH >C ₁₀ -C ₁₆ minus naphthalene (F2)	110	240	440	NL	-	-	NL	NL	NL	NL	-	-	-	-	-	-
TRH >C ₁₆ -C ₃₄	-	-	-	-	-	4,500	-	-	-	-	-	5,300	-	-	-	85,000
TRH >C ₃₄ -C ₄₀	-	-	-	-	-	6,300	-	-	-	-	-	7,400	-	-	-	120,000
Benzene	0.5	0.5	0.5	0.5	-	100	NL	NL	NL	NL	-	120	77	160	NL	1,100
Toluene	160	220	310	540	-	14,000	NL	NL	NL	NL	-	18,000	NL	NL	NL	120,000
Ethylbenzene	55	NL	NL	NL	-	4,500	NL	NL	NL	NL	-	5,300	NL	NL	NL	85,000
Xylene (Total)	40	60	95	170	-	12,000	NL	NL	NL	NL	-	15,000	NL	NL	NL	130,000
PAHs																
Naphthalene	3	NL	NL	NL	-	1,400	NL	NL	NL	NL	-	1,900	NL	NL	NL	29,000
PAHs (Total)	-	-	-	-	300	-	-	-	-	-	300	-	-	-	-	-
Benzo(a)pyrene TEQ ⁵	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-
OCPs/OPPs																
HCB	-	-	-	-	10	-	-	-	-	-	10	-	-	-	-	-
Heptachlor	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-
Aldrin & dieldrin	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-
Chlordane	-	-	-	-	50	-	-	-	-	-	70	-	-	-	-	-
Endosulfan	-	-	-	-	270	-	-	-	-	-	340	-	-	-	-	-
DDE, DDD & DDT	-	-	-	-	240	-	-	-	-	-	400	-	-	-	-	-
Endrin	-	-	-	-	10	-	-	-	-	-	20	-	-	-	-	-
Methoxychlor	-	-	-	-	300	-	-	-	-	-	400	-	-	-	-	-
Chlorpyriphos	-	-	-	-	160	-	-	-	-	-	250	-	-	-	-	-
PCBs																
PCBs (Total)	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-
Asbestos																
Bonded ACM	0.01% w/w				-	-	0.02% w/w				-	-	-	-	-	-

ANALYTE	LOW DENSITY RESIDENTIAL LAND USE						PUBLIC OPEN SPACE LAND USE						MAINTENANCE/EXCAVATION WORKERS			
	HSL A/B (IN SAND) ¹ (mg/kg)				HIL A ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)	HSL C (IN SAND) ¹ (mg/kg)				HIL C ² (mg/kg)	DIRECT CONTACT ³ (mg/kg)	HSLs (IN SAND) ⁴ (mg/kg)			DIRECT CONTACT ³ (mg/kg)
	0 TO <1 m	1 TO <2 m	2 TO <4 m	4 m +			0 TO <1 m	1 TO <2 m	2 TO <4 m	4 m +			0 TO <2 m	2 TO <4 m	4 m +	
Friable asbestos and asbestos fines	0.001% w/w				-	-	0.001% w/w				-	-	-	-	-	-
All forms of asbestos	Not visible in surface soil				-	-	Not visible in surface soil				-	-	-	-	-	-
Heavy metals																
Arsenic	-	-	-	-	100	-	-	-	-	-	300	-	-	-	-	-
Cadmium	-	-	-	-	20	-	-	-	-	-	90	-	-	-	-	-
Chromium	-	-	-	-	100 ⁶	-	-	-	-	-	300 ⁶	-	-	-	-	-
Copper	-	-	-	-	6,000	-	-	-	-	-	17,000	-	-	-	-	-
Lead	-	-	-	-	300	-	-	-	-	-	600	-	-	-	-	-
Mercury	-	-	-	-	40 ⁷	-	-	-	-	-	80	-	-	-	-	-
Nickel	-	-	-	-	400	-	-	-	-	-	1,200	-	-	-	-	-
Zinc	-	-	-	-	7,400	-	-	-	-	-	30,000	-	-	-	-	-

(1) NEPM (2013) Schedule B1 Table 1A(3) Soil HSLs for vapour intrusion (mg/kg)
(2) NEPM (2013) Schedule B1 Table 1A(1) Health investigation levels for soil contaminants (mg/kg)
(3) CRC CARE (2011) Table B4 Soil HSLs for direct contact (mg/kg)
(4) Benzo(a)pyrene toxicity equivalent quotient (TEQ), calculated as a sum of weighted selected PAHs. Further details available in NEPM (2013) Schedule B2
(5) HIL for chromium VI adopted for total chromium as a conservative approach
(6) Inorganic mercury
- No assessment criteria available

NL Non-limiting due to maximum vapour concentrations being below the acceptable health risk level

7.2 ECOLOGICAL SCREENING LEVELS AND ECOLOGICAL INVESTIGATION LEVELS

7.2.1 ECOLOGICAL SCREENING LEVELS

The NEPM (2013) provides ecological screening levels (ESLs) for TRH, BTEX compounds and benzo(a)pyrene for use as an initial screening risk assessment to determine whether laboratory analysed concentrations of contaminants potentially pose a risk to plant growth. For the purpose of this investigation, ESLs for 'urban residential and public open space' land uses with coarse-grained soil textures have been considered. These are outlined in Table 7.2.

Table 7.2 Soil assessment criteria - ESLs

ANALYTE	ESLS FOR URBAN RESIDENTIAL AND PUBLIC OPEN SPACE (MG/KG DRY SOIL)
TRH F1	180
TRH >C ₁₀ -C ₁₆	120
TRH >C ₁₆ -C ₃₄	300
TRH >C ₃₄ -C ₄₀	2,800
Benzene	50
Toluene	85
Ethylbenzene	70
Xylene (total)	105
Benzo(a)pyrene	0.7

7.2.2 ECOLOGICAL INVESTIGATION LEVELS

The NEPM (2013) also provides ecological investigation levels (EILs), which were developed for metals, naphthalene and pesticides. The EILs take into consideration the physiochemical properties of soil and contaminants and the capacity of the local ecosystem to accommodate increases in the contaminant levels. The EILs are derived using the following equation:

$$EIL = \text{added contaminant limit (ACL)} + \text{ambient background concentration (ABC)}$$

The ABC is the background contaminant level and requires measurement at appropriate reference points at the site. The ACL, which is provided in the NEPM (2013), is the maximum contaminant concentration added to the naturally occurring background level, exceedances of which may result in adverse effects on plant health.

Tables 1B(4) and 1B(5) of the NEPM (2013) provide generic EILs for aged arsenic and lead, and fresh DDT and naphthalene in soils (irrespective of their physicochemical properties). Aged values are applicable for contamination present in soil for at least two years. EILs are provided for various land uses including 'areas of ecological significance', 'urban residential and open space' and 'commercial and industrial'. The 'urban residential and open space' and 'urban commercial/industrial' land use EILs have been considered for this investigation.

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>). These calculations require an understanding of the cation exchange capacity (CEC), clay content and pH of the residual soil at the site.

A soil sample collected from 2.0 mBGL in location TP10 was analysed for pH and clay content. CEC was not analysed in error but an assumed value of 5 cmolc/kg dwt has been used because this is the most conservative value. Based on these analyses, the following values were used for calculations of EILs:

- a CEC of 5 cmolc/kg dwt;
- clay content of 6%; and
- pH of 7.8.

To calculate aged ABCs, the spreadsheet requires the state and traffic volume to also be entered. These were entered as 'NSW' and 'low' respectively.

Table 7.3 outlines the EILs (generic and derived) for this investigation.

Table 7.3 Generic and calculated EIL concentrations

ANALYTE	NEPM (2013) EILs (mg/kg)
	URBAN RESIDENTIAL AND OPEN PUBLIC SPACES
Arsenic ¹	100
Chromium (III) ²	340
Copper ²	110
DDT ¹	180
Lead ³	1,100
Nickel ²	30
Zinc ²	310
Naphthalene ¹	170

- (1) NEPM (2013) Schedule B1 Table 1B(5) Generic EILs for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physicochemical properties
- (2) Calculated using the CSIRO Ecological Investigation Level Calculation Spreadsheet
- (3) NEPM (2013) Schedule B1 Table 1B(4) Generic added contaminant limits for lead in soils irrespective of their physicochemical properties

7.3 WASTE CLASSIFICATION

Soil analytical results were also compared to the waste classification criteria in the NSW EPA (2014) *Waste Classification Guidelines*. This was done to provide an indicative, in situ waste classification for soil in the event that remediation or maintenance work that requires soil removal is required.

The waste criteria include contaminant thresholds (CTs) for total concentrations of compounds in soil, as well as higher specific contaminant concentrations (SCCs) for total concentrations when leachability testing is also performed. The SCCs can only be used in combination with the results of toxicity characteristic leaching procedure (TCLP) results. To classify material as general solid waste, the total concentration for each compound must be less than the CT1 value or the SCC1 where the leachate result is also below the TCLP1 value. For restricted solid waste, the CT2 or SCC2 and TCLP2 criteria must be met. any waste that contains asbestos in any form is classified as asbestos waste, in addition to its chemical classification.

The relevant criteria from the waste guidelines is presented in Table 7.4.

Table 7.4 NSW EPA soil criteria for waste classification

	GENERAL SOLID 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)
TRH & BTEX						
TRH C ₆ -C ₉	-	-	650	-	-	2,600
TRH C ₁₀ -C ₃₆	-	-	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

8 INVESTIGATION RESULTS

8.1 SUBSURFACE CONDITIONS

A summary of the subsurface profile encountered during intrusive works is presented in Table 8.1.

Table 8.1 General subsurface profile

DEPTH (mBGL)	GENERAL SOIL DESCRIPTION
0.0 to 0.2 - 0.45	Grass ground cover at all locations. Topsoil/fill; light brown/yellow silty sand, medium to coarse grained, fine to medium grained gravels.
0.2 to 1.0 - 2.0	Sand, coarse grained, red/orange and white/grey in various locations, uniform, fine to medium grained trace gravels

No anthropogenic inclusions were sighted at any sample location with the exception of minor paint flakes being noted at SS_03, TP09_0.0, TP07_0.0, TP02_0.0 and potential ACM fragments were noted in the surface soil sample collected between depth of 0.0 and 0.1 mBGL in sample TP05_0.0 and lying on the site surface at sampling location SS_06. Refusal was not encountered at any test pit or surface location sampled.

Headspace analysis of VOCs was undertaken on all soil samples collected using a calibrated PID. PID readings were reported from 0.0 to 0.3 ppm, suggesting that soils were unlikely to contain significant concentrations of VOCs.

Lead concentration readings were collected from the site surface at approximately 1 metre spacing using a hand-held XRF machine. Readings ranged between 7.6 mg/kg and 27.2 mg/kg with the exception of in the vicinity of TP07 where the most elevated reading was 571 mg/kg and a paint flake was identified on the ground surface. Laboratory analysis was undertaken on a surface sample at TP07 to validate the high reading observed with the XRF (TP07-0.0). The laboratory analysis result was 15 mg/kg.

Environmental test pit logs (including GPS coordinates and PID readings) are provided in Appendix E, and sampling locations are shown on Figure 1.

8.2 HSL/HIL EXCEEDANCES

No exceedances of any adopted criteria for the protection of human health were identified for TRH, BTEX, PAHs, heavy metals, OCPs, OPPs or PCBs. The majority of samples were below the PQLs with the exception of heavy metals, present in all samples, and PAHs, present in one sample, which were above the PQLs but below the adopted assessment criteria.

One ACM fragment was identified on the site surface and one was identified within the top 0.1 m of the soil profile, which are exceedances of the HSL criteria. Laboratory analysis identified crocidolite, chrysotile and amosite asbestos in both samples. The calculated asbestos concentration (in % w/w) of the fragment at TP05_0.0 was 0.1% w/w which exceeds the adopted assessment criteria for the protection of human health for low density residential and open space use.

Minor detections of fluoranthene and pyrene were noted within the sample STP01_03 at 0.6 mg/kg, however they were only just above the PQL of 0.5 mg/kg.

8.3 ESL/EIL EXCEEDANCES

No exceedances of any adopted ecological criteria for the protection of terrestrial ecosystems were identified.

8.4 INDICATIVE WASTE CLASSIFICATION

Concentrations of all analytes were below the CT1 threshold for general solid waste in all samples with the exception of lead within STP01_03 and STP01_04. TCLP analysis was conducted on these two samples for lead and the results were below the TCLP1 threshold for general solid waste.

Concentrations of all analytes were below the CT1 threshold for general solid waste in all samples collected from the test pits and so the soil at the site is indicatively classified as general solid waste. This classification is based on the assumption that the ACM found on the surface of the site at TP05 and SS_06 are due to surficial dumping or weathering, and not due to asbestos being present within the subsurface. If asbestos or evidence of potential asbestos is identified in the subsurface then the material will be classified as special waste (asbestos) within a general solid waste matrix.

If material other than the stockpile were to be removed from site, a more thorough waste classification sampling program would need to be implemented prior to removal. Laboratory analysis results are presented in Appendix F.

9 QA/QC

9.1 SUMMARY OF QA/QC RESULTS

WSP considers that the sample collection, documentation, handling, storage and transportation procedures utilised are of an acceptable standard and the analytical results provided by the laboratories are deemed reliable and complete, therefore the data are considered fit for purpose.

It is considered that the QA/QC procedures and results were acceptable and that the conclusions of the report have not been significantly affected by the sampling or analytical procedures. Based on the results of laboratory QA/QC samples and the sampling and handling procedures used for the collection and analysis of soil, the data were considered representative and appropriate for use in this assessment.

A detailed discussion of the data quality indicators and QA/QC results are located in Appendix C. RPD results are presented within Table 4, Appendix B.

10 DISCUSSION OF RESULTS

All samples recorded concentrations of TRH, BTEXN, PCBs, OCPs and OPPs below the laboratory limits of detection. Heavy metals were generally reported at low concentrations across the site and are considered to be consistent with background levels, with the exception of two slightly elevated lead concentrations and one elevated zinc concentration, which may have been associated with paint flakes from the former reservoir. All results were below the low density residential and open space land use criteria.

Fluoranthene and pyrene were detected in low levels in stockpile sample STP01_03, which were above the PQLs but below the adopted assessment criteria. No other PAH detections were found.

One ACM fragment was collected from the site surface at location SS_06 and one ACM fragment was collected from within the top 0.1 m of the soil profile at location TP05, with the fragments containing chrysotile, crocidolite and amosite. As these two fragments exceed the residential and open space HSL criteria for no asbestos in the top 0.1 m. These fragments were removed from site during the sampling process. The topsoil and site surface at sampling location TP05 was not observed to be different to any other location and it is considered likely the fragment may have been embedded in the subsurface after weathering of the site surface.

Aside from the presence of ACM at the surface, no health or ecological criteria exceedances were identified.

Results are presented in Tables 1 to 3 of Appendix B.

10.1 IN SITU WASTE CLASSIFICATION

The soil at the site is indicatively classified as general solid waste. This classification is based on the assumption that the ACM found on the surface of the site at TP05 and SS_06 are due to surficial dumping or weathering, and not due to asbestos being present within the subsurface. If asbestos or evidence of potential asbestos is identified in the subsurface then the material will be classified as special (asbestos) waste in a matrix consistent with general solid waste.

The material in the stockpile is classified as general solid waste.

If materials are excavated additional sampling is required to confirm waste classification prior to disposing of materials to an off-site waste facility.

Summary tables of results in comparison to waste classification criteria are provided as Table 3 in Appendix B.

10.2 DUTY TO REPORT

The *Contaminated Land Management Act 1997* (CLM Act) grants powers to the NSW EPA to regulate contaminated sites, including the establishment of guidelines regarding the duty to report contamination. The criteria used to assess contamination to determine whether reporting is required is provided in the *Guidelines on the Duty to Report Land Contamination* under the *Contaminated Land Management Act 1997* (EPA, 2015).

Under the guidelines, a site must be reported with respect to contamination in soil if:

- contamination on the site exceeds designated trigger values and a person has been or foreseeably will be exposed to the contamination
- contamination has or foreseeably will enter an adjacent property at concentrations above designated trigger values and will foreseeably remain above the trigger values
- friable asbestos is identified above designated trigger values in or on the soil and a person has been or foreseeably will be exposed to potential inhalation of fibres.

The trigger values used to assess the contamination are the HILs and HSLs provided in NEPM (2013), selected for the current or approved use of the site, or the neighbouring site for off-site contamination.

A trigger value is considered to be exceeded if the 95% upper confidence limit (UCL) of the arithmetic average for results from any affected soil unit or 250% of any individual result is above the HIL or HSL, for identified on-site or off-site contamination. For potential off-site contamination, the foreseeable potential for any contamination exceeding the HILs or HSLs is considered to exceed the trigger value. Friable asbestos is not assessed by the 95% UCL, and any result in excess of the HSL is considered to exceed the trigger value.

The owner of contaminated land and persons whose activities have resulted in contamination of land have a duty to report to the EPA. Reporting is required as soon as practical after the owner or polluter becomes aware of contamination which exceeds the trigger values.

The only HSL exceedances present in the results from the site were for bonded ACM at the site surface. This does not exceed the triggers for a duty to report contamination.

10.3 UPDATED CSM

Table 10.1 provides an updated CSM, which has been revised based on the findings of the desktop and DSI work.

Table 10.1 Updated CSM

Likely sources of impact	<p>Likely sources of impact at the site include:</p> <ul style="list-style-type: none"> — uncontrolled fill materials (potentially historically used to fill the site during construction of the reservoirs); — leaks and spills from machinery/materials stored on-site during construction of the reservoirs; — historical illegal waste dumping; waste that may have been dumped on the site prior to access being restricted by fencing; and — pesticides used historically and recently to maintain the site and the adjacent orchards.
Potentially impacted media	<p>Soil: Chemical contamination and ACM from contaminated fill, waste materials from contaminated fill, waste materials from adjacent residential properties, or from pesticides used on-site.</p> <p>Groundwater: Based on the limited soil impacts, groundwater impact is considered unlikely.</p>

Contaminants of concern	<p>Contaminants of concern at the site comprise:</p> <ul style="list-style-type: none"> — TRH and BTEX compounds; — PAHs; — heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); — OCPs/OPPs; — PCBs; and — asbestos. <p>Based on the assessment results the revised contaminants of concern for the site are considered to include:</p> <ul style="list-style-type: none"> — PAHs; — asbestos; and — metals. <p>Although PAHs and metals did not exceed any criteria in the samples analysed, they are considered to represent contamination at the site and therefore remain contaminants of potential concern.</p>
Migration pathways	<p>Potential migration pathways include:</p> <ul style="list-style-type: none"> — vertical migration of contaminants in soil from infiltration of rainwater; — lateral migration of impacted groundwater; — migration of contaminants through underground service trenches; — run-off of surface contaminants in rainwater; — volatilisation of hydrocarbon contamination; and — airborne migration of contamination in dust or as fibres or vapour.
Potential exposure pathways	<p>Revised potential exposure pathways include:</p> <ul style="list-style-type: none"> — inhalation of dust, fibres or vapours by site users or nearby site users; — ingestion or dermal contact with contaminated surface soils or near surface soils by open space site users or excavation/maintenance workers; and — ingestion or dermal contact with contaminated water downgradient of the site through the use of downgradient surface water bodies for recreation.
Potential sensitive receptors	<p>Based on the site setting, sensitive receptors potentially include:</p> <ul style="list-style-type: none"> — underlying soil and groundwater; — future residential users of the site; — surface watercourses potentially receive groundwater and surface run off from the site; — occupiers of residential properties surrounding and downgradient of the site; and — on-site and off-site construction or utility workers (those working within service pit trenches).

11 CONCLUSIONS

The DSI works were undertaken to assess the current contamination status of the site and potential risks to human health and ecological receptors associated with this contamination with respect to the current (open space) and proposed future land use (low density residential).

The results of the investigation indicated the following:

- All results for BTEX compounds, OCPs, OPPs, PCBs were below the laboratory PQLs, and therefore were below the adopted human health and ecological criteria for the site.
- Samples from the stockpiled soil contained low concentrations of heavy metals, fluoranthene and pyrene above the PQLs but below the low density residential assessment criteria. However, because the stockpile was sourced from the surface remediation of paint flecks it is recommended that it is disposed of off site.
- Concentrations of heavy metals were above the PQLs all samples tested, with the exception of cadmium and mercury where all samples were below PQLs. The majority of the concentrations are considered to be representative of background heavy metal concentrations, although two samples had elevated lead and one of them also had elevated zinc, indicating that paint flakes are potentially present. All results were below the adopted EILs and HILs for low density residential soils.
- ACM was identified within a soil sample collected from a depth of 0.0 to 0.1 mBGL at TP05 and was also identified lying on the site surface at surface at sampling location SS_06. These exceedances were removed during the sampling process. The topsoil and site surface at sampling location TP05 was not observed to be different to any other location and it is considered likely the fragment may have been embedded in the subsurface after weathering of the site surface. Both fragments are an exceedance of the health screening level for surface soil (of no visible asbestos).
- A preliminary in situ waste classification was undertaken based on the laboratory results of soil samples collected from the site. Concentrations of all analytes were below the CT1 threshold or the TCLP1 and SCC1 thresholds for general solid waste in all samples. The soil at the site is indicatively classified as general solid waste, based on the assumption that ACM is not present in the subsurface. If materials are excavated additional sampling is required to confirm waste classification prior to disposing of materials to an off-site waste facility. The stockpiled soil is also classified as general solid waste.
- No duty to report contamination to the NSW EPA was identified.

Based on these results, the site meets the adopted screening/investigations levels for the current open space and proposed residential land use, however, it is recommended that an emu pick of the site surface be undertaken before the site is divested to clear the site surface of ACM fragments.

12 LIMITATIONS

1. This Report has been prepared by WSP Australia Pty Limited (“WSP”) for the benefit of Sydney Water Corporation (“Sydney Water”), the registered proprietor of the site requested to be investigated by WSP under its agreement with Sydney Water dated 1 March 2021 (“Agreement”).
2. The nature and extent of the contamination assessment of the Site detailed in the Report reflects the scope of the Services set out in the Specification in the Agreement. The scope of WSP’s Services and the period of time they relate to are determined by the Agreement and are subject to restrictions and limitations set out in the Agreement. If a Service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by WSP in regards to it.
3. A potential purchaser (but not including a purchaser’s successor in title) of the Site may rely on the findings contained in the Report for the purpose of assessing the level of contamination of that Site (“**Permitted Purpose**”).
4. The findings contained in the Report are subject to the qualifications, assumptions and limitations set out in the Report or otherwise communicated to, or, by Sydney Water. To the extent of any inconsistency between this Limitation Statement and the qualifications, assumptions and limitations in the Report, this Limitation Statement shall prevail.
5. The Report may contain information provided by others. Except as otherwise stated in the Report, WSP has not verified the accuracy or completeness of this information. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the Report (“**Conclusions**”) are based in whole or in part on this information, those Conclusions are contingent upon the accuracy and completeness of that information.
6. WSP accepts no responsibility and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of Sydney Water or sourced from any third party. WSP has assumed that such information is correct unless otherwise stated and no responsibility is accepted by WSP for incomplete or inaccurate data supplied by Sydney Water or any other person for whom WSP is not responsible. WSP has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to WSP.
7. WSP has prepared the Report without regard to any special or particular interest of any person (including that of a potential purchaser), other than Sydney Water when undertaking the Services or setting out its findings in the Report.
8. Matters material to a potential purchaser, may have been omitted from the Report, or may not have been investigated because of the scope of the Services. It follows that a potential purchaser may rely only on what is expressed in the Report, including any restrictions set out in the Report.
9. The Report can only be relied upon for the Permitted Purpose and may not be relied upon for any other purpose and does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in relation to the Site.
10. The Report has not and will not be updated for events occurring after the date of the Report or any other matter which may have a material effect on its contents which come to light after the date of the Report. WSP will not be obliged to inform a potential purchaser of any matter arising or coming to its attention after the date of the Report, which may affect or qualify the Report.
11. Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed WSP to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by WSP or otherwise made available to WSP. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments

or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to WSP when the Services were performed and this Report was prepared. WSP has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

12. WSP is not liable to a potential purchaser in respect of errors or omissions in the Report which a potential purchaser knows of, or ought to be aware of, from:
 - a. its own actual knowledge and inquiries;
 - b. inquiries made by its advisers; or
 - c. matters which a potential purchaser should have been aware of by making reasonable inquiry.
13. To the fullest extent permitted at law, WSP, its related bodies corporate, its officers, employees and agents assume no liability and will not be liable to any potential purchaser for, or in relation to, any losses, damages or expresses (including any indirect, consequential or punitive losses or damages or any amounts for loss of income or profit, revenue or loss of opportunity to earn profit) of any kind (arising in contract, tort (including negligence or otherwise), suffered or incurred by a potential purchaser (or any other third party) arising out of or in connection with any matter outside the ambit of the Permitted Purpose in relation to the Report or findings expressed in the Report.

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<<http://www.epa.nsw.gov.au/prpoeoapp/>>
- NSW Government Water Information website, <<http://allwaterdata.water.nsw.gov.au/water.stm>>

APPENDIX A

FIGURES



Client: Sydney Water Corporation

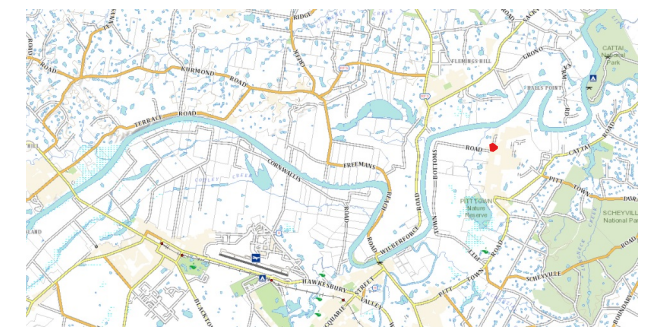
Project: Detailed site investigation

Site address: 4 Hall Street, Pitt Town

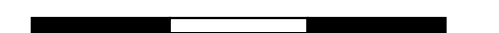
Drawing Title: Figure 1 - site layout and sample location plan

LEGEND

- Site Boundary
- Test Pitting location
- Surface sample location
- Observation test pit locations
- Stockpile location
- Approximate location of former Sydney Water infrastructure



0 10 20 30 m



Coordinate System: GDA 2020 MGA Zone 56
Scale ratio correct when printed at A3

1:657

Date: 27-05-2021

Data Sources: Metrompas

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APPENDIX B

ANALYTICAL RESULTS TABLES



	TRH							BTEX							PAH																		
	GS - C10	GS - C10 less BTEX (F1)	C10 - C16	C10 - C16 less Naphthalene (F2)	C16 - C24	C24 - C40	C10 - C40 (Sum)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Sum)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Benzo(a)pyrene TEQ calc. (Zeo)	Pyrene			
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
EOL	20	20	50	50	100	100	100	0.1	0.1	0.1	0.2	0.1	0.3	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		
NEPM 2013 Table 1A(1) HILs Res A Soil																																	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand 0-1m		45 ^{#1}		110 ^{#2}				0.5	160	55			40															3			3 ^{#1}		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil 0-2m		180 ^{#1}	120 ^{#2}		300	2,800		50	85	70			105					0.7															
NEPM 2013 Table 1B(5) Generic and specific EIL - Urban Res & Public Open Space																											170						
CRC Care 2011 Table B4 Intrusive Maintenance Worker (Direct Contact)		82,000	62,000		85,000	120,000		1,100	120,000	85,000			130,000														29,000						
CRC Care 2011 Table B3 Intrusive Workers (Shallow Trench) 0 to <2m - SAND								77																									

Field ID	Date	Material Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Comments

- #1 Carcinogenic PAHs: HIL based on 8 carc. PAHs & their TEFs (rel to BaP ref Schedule 7) BaP TEQ calc by multiplying the conc of each carc. PAH in sample by its BaP TEF (ref Table 1A(1)) & summing
- #2 Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & naphthalene (should meet relevant HSL)
- #3 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Schedule B7).
- #4 As Chromium VI
- #5 Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
- #6 Elemental mercury: HIL does not address elemental mercury, a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
- #7 PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken
- #8 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
- #9 To obtain F2 subtract naphthalene from the >C10 - C16 fraction.
- #10 Derived soil HSL exceeds soil saturation concentration
- #11 Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
- #12 Moderate reliability.
- #13 Aged values apply to arsenic contamination present in soil > 2 years. Refer Schedule B5c for < 2 years.
- #14 As Chromium III. Site specific ACL value from NEPM 2013 Table 1B(3) using a clay content of 6%.
- #15 Site specific ACL value from NEPM 2013 Table 1B(2) using a soil pH of 7.8.
- #16 Generic ACL value from NEPM 2013 Table 1B(4). To calculate a site specific EIL, add the added background concentration (ABC) to this value.
- #17 Generic ACL value from NEPM 2013 Table 1B(3) using a CEC of 5 meq/100g. The ACL should be adjusted based on site-specific CEC (when available). To calculate a site specific EIL, add the added background concentration (ABC) to the ACL.
- #18 Site specific ACL value from NEPM 2013 Table 1B(1) using a soil pH of 7.8 and a generic and conservative CEC of 5 meq/100g.
- #19 50x20x4
- #20 ACM-Chrysotile; amosite and crocidolite asbestos detected in fibre cement fragments.

	Metals								OCP																											
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	4-BHC	Aldrin	Aldrin + Dieldrin	4-BHC	Chlordane	4-BHC	DDD	DDT	DDT + DDE + DDD	Dieldrin	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	4-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene					
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
EOL	2	0.4	5	5	5	0.1	5	5	0.05	0.05	0.05	0.05	0.05	100	0.05	0.05	0.05	0.05	0.05	50	0.05	0.05	0.05	0.05	50	0.05	0.05	0.05	0.05	0.2	0.1					
NEPM 2013 Table 1A(1) Hills Res A Soil	100 ¹⁵	20	100 ¹⁵	6,000	300 ¹⁵	40 ¹⁶	400	7,400				6		50,000				240						10		6		10	300	20						
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, 5																																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil, 0-2m																																				
NEPM 2013 Table 1B(5) Generic and specific EIL - Urban Res & P	100 ¹⁵		340 ^{15,16}	110 ¹⁵	1,100 ^{15,16}		30 ¹⁷	310 ^{15,16}									180																			
CRC Care 2011 Table B4 Intrusive Maintenance Worker (Direct C																																				
CRC Care 2011 Table B3 Intrusive Workers (Shallow Trench) 0 to																																				

Field ID	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														</
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EQL
NEPM 2013 Table 1A(1) HILs Res A Soil
NEPM 2013 Table 1A(3) Res A/8 Soil HSL for Vapour Intrusion, S
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil 0-2m
NEPM 2013 Table 1B(5) Generic and specific EIL - Urban Res & P
CRC Care 2011 Table B4 Intrusive Maintenance Worker (Direct C
CRC Care 2011 Table B3 Intrusive Workers (Shallow Trench) 0 to



Table 2
Sydney Water
Pitt Town - Soil properties

PS123998-04

		Soil Properties			
		Clay	Conductivity*	pH**	Cation Exchange Capacity
		%	uS/cm	pH Units	meq/100g
EQL		1	10	0.1	0.05
Field ID	Date				
TP10_2.0	14/4/2021	6	-	7.8	-

*Conductivity - 1:5 Aqueous extract at 25°C as rec.

**pH - 1:5 Aqueous extract at 25°C as rec.

	TPH		BTEX				PAH		Metals							OCP			OPP	PCB	Asbestos presence/absence
	C6 - C9	C10 - C36 (Sum)	Benzene	Toluene	Ethylbenzene	Xylene (Sum)	Benzo(a) pyrene	PAHs (Sum)	Arsenic	Cadmium	Chromium	Lead	Lead TCLP	Mercury	Nickel	Endosulfan I	Endosulfan II	Endosulfan sulphate	Chlorpyrifos	PCBs (Sum of total)	
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
NSW 2014 General Solid Waste CT1 (No Leaching)	20	50	0.1	0.1	0.1	0.3	0.5	0.5	2	0.4	5	5	5	0.1	5	0.05	0.05	0.05	0.2	0.5	
NSW 2014 General Solid Waste SCC1 (with leached)	650	10,000	10	288	600	1,000	0.8	200	100	20	100 ^{#1}	100		4	40	60 ^{#2}	60 ^{#2}	60 ^{#2}	4	50	
NSW 2014 General Solid Waste TCLP1 (leached)	650	10,000	18	518	1,080	1,800	10	200	500	100	1,900 ^{#1}	1,500	5	50	1,050	108 ^{#2}	108 ^{#2}	108 ^{#2}	7.5	50	
NSW 2014 Restricted Solid Waste CT2 (No Leaching)	2,600	40,000	40	1,152	2,400	4,000	3.2	800	400	80	400 ^{#1}	400		16	160	240 ^{#2}	240 ^{#2}	240 ^{#2}	16	50	
NSW 2014 Restricted Solid Waste SCC2 (with leached)	2,600	40,000	72	2,073	4,320	7,200	23	800	2,000	400	7,600 ^{#1}	6,000		200	4,200	432 ^{#2}	432 ^{#2}	432 ^{#3}	30	< 50	
NSW 2014 Restricted Solid Waste TCLP2 (leached)													20								

Field ID	Date	Matrix Description																					
STP01 - 01	14/4/2021	-	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	6.4	25	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
STP01 - 02	14/4/2021	-	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	5.1	75	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
STP01 - 03	14/4/2021	-	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	1.2	<2	<0.4	5.1	120	0.05	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
STP01 - 04	14/4/2021	-	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	5.2	140	0.05	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
STP01 - 05	14/4/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Nil
TP01 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	2.6	<0.4	5.6	18	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP01 - 0.3	14/4/2021	Natural	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	9.9	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP02 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	<5	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP03 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	9.5	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP03 - 0.5	14/4/2021	Natural	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	<5	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP04 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	6.9	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP05 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	9.8	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP05 - 0.5	14/4/2021	Natural	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	6.5	6.8	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP06 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	5.9	38	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP07 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	5.4	15	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP07 - 0.3	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	5.5	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	-
TP08 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	14	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
TP09 - 0.0	14/4/2021	Fill	<20	<250	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	2.0	<0.4	6.3	31	-	<0.1	<5	<0.5	<0.5	<0.5	<0.5	<1	Nil
TP09 - 0.3	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	21	-	<0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	-
TP10 - 0.0	14/4/2021	Fill	<20	<50	<0.1	<0.1	<0.1	<0.3	<0.5	<0.5	<2	<0.4	<5	38	-	0.1	<5	<0.05	<0.05	<0.05	<0.2	<0.5	Nil
SS_01	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_02	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_03	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_04	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_05	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_06	14/4/2021	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.2	-	-
SS_06_FRAG	14/4/2021	ACM Fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CH, AM, CR#20

Comments
#1 As Chromium VI
#2 Action level for the sum of Endosulfan I, Endosulfan II and Endosulfan sulfate.
#3 Action level for the sum of Endosulfan I, Endosulfan II and Endosulfan Sulfate



Table 4
Sydney Water
Castle Hill - RPD results table

EOL	TRH										BTEX								PAH												Metals							
	C5- C10	C10- C16	C16- C24	C24- C40	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[b]pyrene	Benzo[k]fluoranthene	Benzo[a,h]perylene	Benzo[e]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Phenanthrene	Pyrene	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc					
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
	10	50	100	100	0.1	0.1	0.1	0.2	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.4	2	5	5	0.1	2	5					

Lab Report Number	Field ID	Date	Matrix Type																																	
729726	TP08_0.1	2/07/2020	soil	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.2	<0.1	<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	8.6	<0.4	21	24	29	<0.1	12	63		
	QA01	2/07/2020	soil	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.2	<0.1	<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	13	<0.4	27	33	39	<0.1	14	81	
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
729726	TP08_0.1	2/07/2020	soil	<20	<50	<100	<100	<0.1	<0.1	<0.1	<0.2	<0.1	<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	8.6	<0.4	21	24	29	<0.1	12	63	
ES2023196	QA01A	2/07/2020	soil	<10	<50	<100	<100	<0.2	<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	7	<1	18	23	25	<0.1	8	47	
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	15	4	15	0	40	29

Comments
#1 Nil
#2 No asbestos detected at the reporting limit of 0.01% w/w.Organic fibre detected.No trace asbestos detected.
#3 Organic fibres detected.
#4 No respirable fibres detected.

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x EQL); 50 (10 - 20 x EQL); 50 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

[illegible][illegible]



Table 4
Sydney Water
Castle Hill - RPD results table

Phenols													
	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,6-dichlorophenol	2-chlorophenol	2-methylphenol	2-nitrophenol	3,4-methylphenol (m/p-cresol)	4-chloro-3-methylphenol	2-nitrochlorophenol	Phenol	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.5	0.4	0.5	1	0.5	

Lab Report Number	Field ID	Date	Matrix Type										
729726	TP08_0.1	2/07/2020	soil	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<0.4	<1
	QA01	2/07/2020	soil	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<0.4	<1
RPD				0	0	0	0	0	0	0	0	0	0
729726	TP08_0.1	2/07/2020	soil	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<0.4	<1
ES2023196	QA01A	2/07/2020	soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<1
RPD				0	0	0	0	0	0	0	0	0	0



Table 5
Sydney Water
Pitt Town - Trip blank results

	TRH		TPH	BTEX					
	C6 - C10	C6 - C10 less BTEX (F1)	C6 - C9	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Sum)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	20	20	20	0.1	0.1	0.1	0.2	0.1	0.3

Lab Report	Field ID	Date	Matrix Type									
788342	TB_140421	14/4/2021	soil	<20	<20	<20	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3



Table 6
Sydney Water
Pitt Town - Rinsate blank results

				TRH								TPH					BTEX					PAH																						
				C6 - C10	C6 - C10 less BTEX (F1)			C10 - C16		C10 - C16 less Naphthalene (F2)			C16 - C34	C34 - C40	C10 - C40 (Sum)	C6 - C9	C10 - C14		C15 - C28	C29 - C36	C10 - C36 (Sum)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Sum)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b&f)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	PAHs (Sum)	Pyrene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL				20	20	50	50	100	100	100	20	50	100	100	100	1	1	1	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lab Report Number	Field ID	Date	Matrix Type	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
788342	RB_140421	14/4/2021	water	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			

								Metals								OCP																									
								Arsenic (filtered)	Cadmium (filtered)	Chromium (filtered)	Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	4,4-DDE	α-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	Chlordane	δ-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene			
								µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL								1	0.2	1	1	1	0.1	1	5	0.1	0.1	0.1	0.2	0.1	2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1
Lab Report Number	Field ID	Date	Matrix Type																																						
788342	RB_140421	14/4/2021	water	<1	<0.2	<1	<1	<1	<0.1	<1	<5	<0.1	<0.1	<0.1	<0.2	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<1			

OPP																																	PCB																				
Azinophos methyl	Boistar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethoprop	Ethion	Fenitrothion	Fensulfotion	Fenthion	Malathion	Mephos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Pirimphos-methyl	Pyrazophos	Ronnel	Tebuifos	Tetrachlorvinphos	Tekuthion	Trichloronate	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1221													
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L													
2	2	2	20	2	20	2	20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	20	2	2	2	2	2	2	5	5	5	5	5	5	1													
EQL																																																					
Lab Report Number		Field ID		Date		Matrix Type																																															
788342		RB_140421		14/4/2021		water																																															
<2		<2		<2		<20		<2		<20		<2		<20		<2		<2		<2		<2		<2		<2		<20		<2		<2		<2		<2		<2		<5		<5		<5		<5		<5		<5		<1	

APPENDIX C

QA/QC RESULTS TABLES



DQIS FOR ANALYTICAL DATA

The DQIs for sampling techniques and laboratory analyses of collected representative soil samples define the acceptable level of error required for this investigation. The DQOs have been assessed by reference to the attributes presented in Table C.1.

Table C.1 Data Quality Indicators

DQI	DESCRIPTION	APPLICABILITY
Representativeness	The confidence that the data are representative of each media present on the site. Expresses the degree to which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Controlled through selecting sampling locations that exemplify site conditions and obtaining suitable samples.	Consistent and repeatable sampling techniques and methods were utilised.
Precision	The quantitative measure of the variability (or reproducibility) of data. Expressed as relative percentage differences (RPDs), assessed by determining the RPDs between the original and duplicate samples tested. Validity of the data is questioned if the RPD limits are exceeded and upon further investigation a reason cannot be determined.	Work was conducted in accordance with WSP standard procedures. The precision of the data was assessed by calculating the RPDs of duplicate samples following AS 4482.1 (2005). The results are presented in the Field QA/QC section below.
Accuracy	The quantitative measure of the closeness of reported data to the true values. Accuracy can be undermined by such factors as field contamination of samples, poor preservation or preparation techniques.	Accuracy was assessed by using equipment blanks and laboratory QA/QC analytical results (including laboratory control samples, spikes, and reference samples). Results are presented in Table C2.
Completeness	The measure of the amount of usable data from a data collection activity. Valid chemical data are the values that have been identified as acceptable or validated.	The completeness goal was set at there being sufficient valid data generated during the study. Measurements made were judged to be valid measurements.
Comparability	The confidence that data may be considered to be equivalent for each sampling analytical event, i.e. the confidence with which one data set can be compared with another. Achieved through qualitative assessment of QA/QC procedures, using comparable field sampling, laboratory sample preparation and analytical procedures and reporting units.	The sampling was in general accordance with the sampling and analysis procedures and as per standard industry procedures. Each sample was analysed using identical methods for each analyte and laboratory practical quantitation limits (PQLs) were consistent over each laboratory batch. A check laboratory was used to provide data to make a comparative assessment of variability between laboratories.

Table C.2 summarises conformance to specific QA/QC procedures.

Table C.2 Data quality assurance

ITEM	OBJECTIVES MET
Environmental consultant	The environmental consultant maintains Quality Assurance Systems certified to AS/NZS ISO 9001:2000. Qualified and experienced environmental scientists with more than 3 years' experience completed field works.
Procedures	All work was conducted in accordance with relevant statutory work health and safety (WHS) and environmental sampling guidelines (NEPM (2013), NSW EPA (1995) and WA DoH 2009), as well as standard company WHS and environmental field procedures. Standard field sampling sheets were used. Details recorded included WSP staff and contractors present, time on/off-site, weather conditions, calibration records and comments.
Sampling	Collection of samples was undertaken by appropriately qualified and experienced personnel following WSP standard field procedures which are based on industry accepted standard practice. Chain of custody was used to ensure the integrity of samples from collection to receipt by the laboratory.
Field equipment	Equipment was serviced and calibrated as per the manufacturer requirements.
Equipment decontamination	Undertaken after each sampling episode where equipment used was not dedicated. The rinsate blank was below PQLs for the potential contaminants analysed. Field sampling procedures conformed to WSP QA/QC protocols to prevent cross contamination, preserve sample integrity, and allow for collection of a suitable data set from which to make technically sound and justifiable decisions with data of satisfactory usability. QA/QC sample results are presented in in Appendix C.
Transportation	Samples were stored in chilled eskies on-site and during transport via courier to the laboratory. A chain of custody form was completed on-site and sent with the samples. The laboratory confirmed receipt of the samples and specified the condition on delivery and the scheduled analyses. Appropriate holding times were met. Trip blank samples were carried during field works (at a rate of one per sample batch) to assess contamination through field activities and transport. Results were below laboratory PQLs.
Field QA/QC	One rinsate blank was collected during the soil field works. The rinsate blank was analysed for TRH, BTEX compounds, PAHs, OCPs, OPPs, PCBs and heavy metals. All results were below PQLs. One trip blank was analysed for volatile TRH, BTEX compounds and naphthalene. All results were below PQLs. QA/QC sampling was undertaken to industry standard procedures including approximately 1 in 20 blind duplicates (intra-laboratory) to the primary laboratory and approximately 1 in 20 blind duplicates (inter-laboratory) to the secondary laboratory. Field and laboratory acceptable limits are between 30-50% RPD as stated by AS 4482.1-1997. Non-compliances have been documented in Section 'Field QAQC' below within Appendix C of this report.

ITEM	OBJECTIVES MET
Laboratory analysis	Analysis was carried out by laboratories with NATA certification for the required analyses with the exception of asbestos quantification. NATA has noted that there is no accepted valid method in Australia for this estimation and that they do not offer accreditation for this activity. Detection limits were sufficient to enable comparison against the appropriate guidelines. All PQLs adopted by the laboratories were less than the adopted assessment criteria.
Acceptable limits for QA/QC samples	Primary laboratory QA/QC acceptance limits for recovery of surrogates, control samples are matrix spikes to be 70 to 130% for organics and 80 to 120% recovery for inorganics and waters. All method blanks were less than PQL.
Reporting	Report complies with the NEPM (2013).

FIELD QA/QC

The following sections discuss the field QA/QC program. Summary tables of QA/QC results are provided as Tables B4 to B6 in Appendix B, and the results for internal and external QA/QC procedures are provided within the laboratory analysis reports in Appendix F.

DUPLICATES

The field QA/QC soil sampling program comprised collection and analysis of one intra-laboratory duplicate (QA01) and one inter-laboratory duplicate (QA01A) of primary soil sample TP08_0.1, analysed for TRH, BTEX, PAHs, OCPs, OPPs, PCBs and heavy metals.

No field duplicate analysis was undertaken for asbestos quantification. The purpose of collecting duplicate samples is to measure the potential for inaccuracy in sample results due to field or laboratory procedures. Analysis of anonymised duplicate samples by the primary and secondary laboratories serves to determine the degree to which sample analyses which should provide identical results do, in fact, provide them. The way this is measured is through the calculation of RPDs.

For contaminants which are discrete within the matrix being sampled, such as bonded asbestos, fibrous asbestos and asbestos fines in soil, the duplication of a particular sample does not logically support the objective of duplicate sampling. Chemical contaminants tend, through a variety of processes, to diffuse towards homogeneous concentrations. However, as asbestos contamination represents foreign bodies present in the soil which do not diffuse except through mechanical mixing there is no logical expectation of similar quantities in any two discrete samples, even two samples split from one larger one. Therefore, the results of the analyses of two such samples should not be expected to comply with the same RPD criteria by which chemical contaminants are measured.

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, and the results are presented in Table B4 in Appendix B.

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

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

The RPD values were compared to the 30–50% RPD acceptance criterion outlined in Australian Standard AS 4482.1 (for non- and semi-volatiles in soil) and NEPM (2013) Schedule B3. For volatile compounds no published RPD acceptance

criteria exists, however RPDs of <100% are considered acceptable where concentrations are at least 10 times the PQL. RPDs for results less than the PQL were not calculated. In instances where results were greater than the PQL for the one sample, but below PQL for the corresponding primary or duplicate sample, a result equal to the PQL was adopted in order to calculate an RPD.

The majority of RPD results were below the LORs with the exception of the metals results, excluding cadmium and mercury which were both reportedly at 0%. The metals RPD ranged from 0% to 41%, however, as the results are below the adopted 100% difference, these values are considered to be acceptable.

The RPD exceedances are not considered to be significant with regard to reliability of the triplicate results and can most likely be attributed to the heterogeneity of the sample which is not uncommon for soils. The minor lack of precision does not affect the interpretation of the results as the concentrations across the soil dataset for chromium and mercury were mostly lower than the assessment criteria.

LABORATORY QA/QC

Quality control parameter frequency compliance, provided by both laboratories, indicated that quality control analysis was undertaken within the required frequency and matrix spike recoveries were reported to be within recovery limits. All laboratory duplicate, spike, control sample and blank results met the acceptance criteria for the laboratories internal quality review.

APPENDIX D

SITE PHOTOGRAPHS





PHOTOGRAPHIC LOG

Client Name
Sydney Water

Site Location
Pitt Town

Project
Detailed site investigation

Photo No.	Date	
1	26/03/21	
Description Site facing west along the southern site boundary.		<div><div><div>DIRECTION 281 deg (T)</div><div>33.57295°S 150.85911°E</div><div>ACCURACY 7 m DATUM WGS84</div></div><div><div> Taken With Context Camera 2021-03-29 08:18:28+11:00</div></div></div>

Photo No.	Date	
2	26/03/21	
Description Western corner of site, facing west.		<div><div><div>DIRECTION 244 deg (T)</div><div>33.57282°S 150.85884°E</div><div>ACCURACY 5 m DATUM WGS84</div></div><div><div> Taken With Context Camera 2021-03-29 08:19:14+11:00</div></div></div>


	PHOTOGRAPHIC LOG	
Client Name Sydney Water	Site Location Pitt Town	Project Detailed site investigation


Photo No.	Date	
3	26/03/21	<div data-bbox="539 427 1455 483"> DIRECTION 121 deg(T) 33.57269°S 150.85952°E ACCURACY 7 m DATUM WGS84 </div>  <div data-bbox="1155 981 1437 1111"> Taken With Context Camera 2021-03-29 08:29:24+11:00 </div>
Description Site facing south across the former location of the large reservoir.		

Photo No.	Date	
4	26/03/21	<div data-bbox="539 1234 1455 1290"> DIRECTION 346 deg(T) 33.57271°S 150.85954°E ACCURACY 5 m DATUM WGS84 </div>  <div data-bbox="1155 1787 1437 1917"> Taken With Context Camera 2021-03-29 08:29:39+11:00 </div>
Description Site facing north across the former location of the large reservoir.		


	PHOTOGRAPHIC LOG	
Client Name Sydney Water	Site Location Pitt Town	Project Detailed site investigation

Photo No.	Date	
5	26/03/21	<div> <div>DIRECTION 234 deg(T)</div> <div>33.57226°S 150.85969°E</div> <div>ACCURACY 56 m DATUM WGS84</div> </div>
Description Stockpile from reservoir removal, facing west.		

Photo No.	Date	
5	26/03/21	<div> <div>DIRECTION 113 deg(T)</div> <div>33.57261°S 150.85936°E</div> <div>ACCURACY 7 m DATUM WGS84</div> </div>
Description Stockpile from reservoir removal.		


		PHOTOGRAPHIC LOG	
Client Name Sydney Water	Site Location Pitt Town	Project Detailed site investigation	



Photo No.	Date			
6	14/04/21			
Description				
Subsurface profile example TP08.				

Photo No.	Date			
7	14/04/21			
Description				
Subsurface profile example TP05.				



		PHOTOGRAPHIC LOG	
Client Name Sydney Water		Site Location Pitt Town	Project Detailed site investigation

Photo No. 8	Date 14/04/21		
Description Potential lead paint flake at TP07.			

APPENDIX E

ENVIRONMENTAL TEST PIT LOGS





TEST PIT ENVIRONMENTAL LOG

SS01

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Manual excavation

Surface RL:

Excavation Width: 500

Co-ords:

E 301346.409 N 6283140.715

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
				JAR			silty SAND: coarse grained, loose, dry, some gravels, no contamination observed			SS_01
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m			



TEST PIT ENVIRONMENTAL LOG

SS02

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Manual excavation
Excavation Width: 500

Surface RL:
Co-ords: E 301347.939 N 6283151.037

Test Pit Information				Field Material Description													
1	2	3	4	5	6	7	8	9	10	11							
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE	RELATIVE DENSITY /CONSISTENCY	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)						
								VS	FB	VL	ST	MD	VST	D	H		
				JAR			silty SAND: coarse grained, loose, dry, some gravels, organics										SS_02
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m										



TEST PIT ENVIRONMENTAL LOG

SS03

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Manual excavation
Excavation Width: 500

Surface RL:
Co-ords: E 301349.244 N 6283160.238

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F L MD ST VST D H	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
			JAR				silty SAND: coarse grained, loose, dry, potential lead paint flake			SS_03
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m			



TEST PIT ENVIRONMENTAL LOG

SS04

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Manual excavation
Excavation Width: 500

Surface RL:
Co-ords: E 301351.332 N 6283173.67

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F L MD ST VST D H	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
				JAR			silty gravelly SAND: coarse grained, loose, dry, fine grained gravels			SS_04
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m			

**TEST PIT ENVIRONMENTAL LOG****SS05**

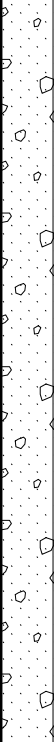
SHEET 1 OF 1

Client: **Sydney Water**
Project: **Detailed site investigation**
Test Pit Location: **4 Hall St**
Project Number: **PS123998-04**

Date Commenced: **14/4/21**
Date Completed: **14/4/21**
Recorded By: **BU**
Log Checked By: **IP**

Excavation Method: **Manual excavation**
Excavation Width: **500**

Surface RL:
Co-ords: **E 301353.826 N 6283185.623**

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F L MD ST VST D H	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
				JAR			silty gravelly SAND: coarse grained, loose, dry, fine grained gravels			SS_05
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m			



TEST PIT ENVIRONMENTAL LOG

SS06

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Manual excavation
Excavation Width: 500

Surface RL:
Co-ords: E 301353.794 N 6283193.184

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F L MD ST VST D H	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
			JAR				silty SAND: coarse grained, potential ACM fragment			SS_06
							End of manual excavation. TP Terminated - END OF TEST PIT AT 0.10 m			

TEST PIT ENVIRONMENTAL LOG

TP01

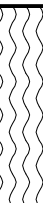


SHEET 1 OF 1

Client:	Sydney Water
Project:	Detailed site investigation
Test Pit Location:	4 Hall St
Project Number:	PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method:	Excavator 3T
Excavation Width:	500

Surface RL:
Co-ords: **E 301270.724 N 6283150.68**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)		MOISTURE	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
				JAR			TOPSOIL: silty SAND; medium to coarse grained, some fine to medium grained gravels	VS	FB		TP01_0.0
		0.20		JAR			darker brown	VL	MD		TP01_0.3
		0.40		JAR			SAND: white/grey, some gravels	ST	VD		TP01_0.5
		-1									
				JAR			End of mechanical excavation. TP Terminated - END OF TEST PIT AT 1.00 m				TP01_1.4



TEST PIT ENVIRONMENTAL LOG

TP02

SHEET 1 OF 1

Client: **Sydney Water**
 Project: **Detailed site investigation**
 Test Pit Location: **4 Hall St**
 Project Number: **PS123998-04**

Date Commenced: **14/4/21**
 Date Completed: **14/4/21**
 Recorded By: **BU**
 Log Checked By: **IP**

Excavation Method: **Excavator 3T**
 Excavation Width: **500**

Surface RL:
 Co-ords: **E 301298.739 N 6283151.136**

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F ST MD VST D H	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.2 ppm	B&J				TOPSOIL: silty gravelly SAND; potential lead paint on surface			TP02_0.0
			JAR							TP02_0.3
	0.40		JAR				SAND: medium to coarse grained, red/orange			TP02_0.5
		PID=0 ppm	B&J				End of mechanical excavation. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP02_1.0



TEST PIT ENVIRONMENTAL LOG

TP03

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301338.448 N 6283140.179

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL SL FL MD ST SD VD	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.2 ppm	B&J				TOPSOIL: silty SAND; medium to coarse grained, some fine to medium grained gravels			TP03_0.0
	0.40			JAR			SAND: medium to coarse grained, red/orange			TP03_0.5
	-1	PID=0 ppm	B&J				End of mechanical excavation 0.5 m into natural. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP03_1.0



TEST PIT ENVIRONMENTAL LOG

TP04

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301290.523 N 6283162.991

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL ST F MD VST D H	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.2 ppm	B&J				TOPSOIL: silty SAND; medium to coarse grained, brown, some fine to medium grained gravels			TP04_0.0
		0.35	JAR				SAND: coarse grained, red, fine to medium grained trace gravels			TP04_0.3
		PID=0.2 ppm	B&J							TP04_0.5
		-1	JAR				End of mechanical excavation 0.5 m into natural. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP04_1.0



TEST PIT ENVIRONMENTAL LOG

TP05

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301325.219 N 6283153.542

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL SL FL MD ST SD VD	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.1 ppm	B&J				TOPSOIL: silty SAND: medium to coarse grained, brown, potential ACM fragment, glass			TP05_0.0
	0.45	PID=0 ppm	B&J				SAND: coarse grained, red, uniform			TP05_0.5
	-1	JAR					End of mechanical excavation 0.5 m into natural. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP05_1.0



TEST PIT ENVIRONMENTAL LOG

TP06

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301338.572 N 6283164.356

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F ST MD VD H	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.3 ppm	B&J				TOPSOIL: silty SAND; brown			TP06_0.0
	0.20						SAND: coarse grained, red/orange, uniform			TP06_0.5
		PID=0 ppm	B&J				End of mechanical excavation. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP06_1.0



TEST PIT ENVIRONMENTAL LOG

TP07

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301307.358 N 6283161.975

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL SF LM ST MD VST D H VD	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.2 ppm	B&J				TOPSOIL: silty gravelly SAND; potential lead paint on surface			TP07_0.0
			JAR							TP07_0.3
	0.40						SAND: medium to coarse grained, red/orange			TP07_0.5
		PID=0.1 ppm	B&J							
			JAR							TP07_1.0
	1.00-1						End of mechanical excavation. Backfilled.			
							TP Terminated - END OF TEST PIT AT 1.40 m			

TEST PIT ENVIRONMENTAL LOG

TP08



SHEET 1 OF 1

Client:	Sydney Water
Project:	Detailed site investigation
Test Pit Location:	4 Hall St
Project Number:	PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method:	Excavator 3T
Excavation Width:	500

Surface RL:
Co-ords: **E 301315.649 N 6283176.651**

Test Pit Information				Field Material Description							
1	2	3	4	5	6	7	8	9	10	11	
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE	RELATIVE DENSITY /CONSISTENCY	Field pH	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
				JAR			TOPSOIL: silty gravelly SAND; medium to coarse grained, brown, fine to medium grained gravels	VS	FB		TP08_0.0
				JAR				VL	MD		
		0.40		JAR			SAND: coarse grained, red, uniform	ST	VD		TP08_0.3
				JAR				SH			TP08_0.5
		-1		JAR			End of mechanical excavation. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m				TP08_1.0



TEST PIT ENVIRONMENTAL LOG

TP09

SHEET 1 OF 1

Client: Sydney Water
Project: Detailed site investigation
Test Pit Location: 4 Hall St
Project Number: PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method: Excavator 3T
Excavation Width: 500

Surface RL:
Co-ords: E 301336.051 N 6283177.817

Test Pit Information				Field Material Description						
1	2	3	4	5	6	7	8	9	10	11
WATER	RL(m)	DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents, moisture, relative density/consistency) (ROCK NAME; grain size, colour, weathering, strength, minor constituents)	MOISTURE VS FB VL S F L MD ST D VST H	RELATIVE DENSITY /CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS (Defects - depth, type, orientation, spacing, planarity, roughness, thickness, coating)
		PID=0.1 ppm	B&J				TOPSOIL: silty SAND; some gravels, paint flake observed at site surface			TP09_0.0
			JAR							TP09_0.3
	0.45	PID=0 ppm	B&J				SAND: medium to coarse grained, red, moist			TP09_0.5
	-1		JAR				End of mechanical excavation. Backfilled. TP Terminated - END OF TEST PIT AT 1.00 m			TP09_1.0

TEST PIT ENVIRONMENTAL LOG

TP10

SHEET 1 OF 1

Client:	Sydney Water
Project:	Detailed site investigation
Test Pit Location:	4 Hall St
Project Number:	PS123998-04

Date Commenced: 14/4/21
Date Completed: 14/4/21
Recorded By: BU
Log Checked By: IP

Excavation Method:	Excavator 3T
Excavation Width:	500

Surface RL:
Co-ords: **E 301348.084 N 6283180.173**

[illegible]

APPENDIX F

LABORATORY REPORT



Company	WSP Australia Pty Limited			Project No	PS123998						Project Manager	Imogen Powell			Relinquished by		Bianca Underwood									
Address	Level 27, 680 George Street Sydney, NSW 2000 Australia			Project Name	Sydney Water - Pitt Town						Report Format	PDF + Esdat														
Contact Name	Imogen Powell			Analyses Note: Where indicated, repeat (Minimum 3 "True" or "False") Subsequent analyses must be done in duplicate	HOLD	TRH and BTEXN	METALS (8)	PAHs	OCs/QPPs	PCBs	Asbestos ID	ASBESTOS (NEPM)	pH and Clay content	SEND TO SGS	Asbestos PA	Email for Results	Imogen.Powell@wsp.com Bianca.underwood@wsp.com amy.valentine@wsp.com									
Phone No	402028319																Containers		Turnaround Time (TAT)							
Special Directions																	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA Vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4864-VA Guidelines)	Overnight (9am)*	
Purchase Order																	3 Day*	5 Day	* Surcharges apply							
Quote ID No	210125WSPN																									
No	Client Sample ID	Sampled Date	Matrix														Sample Comments / Dangerous Goods Hazard Warning									
35	TP10_0.5	14-04-21	SOIL														1	1								
36	TP10_2.0	14-04-21	SOIL										X				1	1								
37	QA101	14-04-21	SOIL														1									
38	QA101A	14-04-21	SOIL		X	X	X	X	X					X			1									
39	STP01_01	14-04-21	SOIL		X	X	X	X	X						X		1	1								
40	STP01_02	14-04-21	SOIL		X	X	X	X	X						X		1	1								
41	STP01_03	14-04-21	SOIL		X	X	X	X	X						X		1	1								
42	STP01_04	14-04-21	SOIL		X	X	X	X	X						X		1	1								
43	STP01_05	14-04-21	SOIL		X	X	X	X	X						X		1	1								
44	SS_01	14-04-21	SOIL						X								1									
45	SS_02	14-04-21	SOIL						X								1									
	SS_03	14-04-21	SOIL						X								1									
46	SS_04	14-04-21	SOIL						X								1									
47	SS_05	14-04-21	SOIL						X								1									
48	SS_06	14-04-21	SOIL						X								1									
49	SS_06_frag	14-04-21	SOIL								X							Potential ACM								
48	TB_140421	14-04-21	SOIL		X												1									
49	RB_140421	13-04-21	WATER		X	X	X	X	X																	
49																										
Total Counts					8	7	7	13	7	1			1	1	5		16	7								
Method of Shipment	Courier (#)	Hand Delivered	Postal	Name											Date	Time									

Report number #

788342

M.H

CHAIN OF CUSTODY RECORD

Company		Project No		Project Name		Project Manager		Project Format		Project Email		Project Address	
WSP Australia Pty Limited		P512398		Sydney Water - Pitt Town		Imogen Powell		PDF + Excel		Blanca Underwood		15-04-21	
Address		Level 27, 680 George Street Sydney, NSW 2000 Australia		Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Contact Name		Imogen Powell / Blanca Underwood		Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Phone No		0402028319 / 0404822283		Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Special Directions				Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Purchase Order				Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Quote ID No		210125WSPN		Project Name		Sydney Water - Pitt Town		Project Format		Project Email		Project Address	
Client Sample ID	Sampled Date	Matrix	HOLD	TRI and BTEX	METALS (6)	PAHs	OC/PCPPs	PCBs	Asbestos ID	ARRESTOS (NENI)	Requisitioned by	Blanca Underwood	15-04-21
TP01_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP01_0.3	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP01_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP01_1.4	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP02_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP02_0.3	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP02_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP02_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP03_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP03_0.5	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP03_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP04_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP04_0.3	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP04_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP04_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP05_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP05_0.5	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP05_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP06_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP06_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP06_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP07_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP07_0.3	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP07_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP07_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP07_Painting	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP08_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP08_0.3	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP08_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP08_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP09_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP09_0.3	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP09_0.5	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP09_1.0	14-04-21	SOIL									Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
TP10_0.0	14-04-21	SOIL	X	X	X	X	X	X	X	X	Imogen.Powell@wsp.com	Blanca.underwood@wsp.com	15-04-21
Total Samples			15	15	15	15	15	15	13				

Report Number #
788342
M.H 16/04/21

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Sample Receipt Advice

Company name: WSP Australia P/L NSW
Contact name: Imogen Powell
Project name: SYDNEY WATER - PITT DOWN
Project ID: PS123998
Turnaround time: 5 Day
Date/Time received: Apr 16, 2021 11:58 AM
Eurofins reference: 788342

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 2.9 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Sample (STP01_05) Jar have not received Analyse cancel, Sample QA10A sent to SGS, Subsample TP10-0.2 Sent to Bris

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elvis Dsouza on phone : or by email: ElvisDsouza@eurofins.com

Results will be delivered electronically via email to Imogen Powell - imogen.powell@wsp.com.

Note: A copy of these results will also be delivered to the general WSP Australia P/L NSW email address.

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Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B:TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	TP01 - 0.0	Apr 14, 2021		Soil	S21-Ap30456			X					X		X
2	TP01 - 0.3	Apr 14, 2021		Soil	S21-Ap30457			X					X		X
3	TP02 - 0.0	Apr 14, 2021		Soil	S21-Ap30458			X					X		X
4	TP03 - 0.0	Apr 14, 2021		Soil	S21-Ap30459			X					X		X
5	TP03 - 0.5	Apr 14, 2021		Soil	S21-Ap30460			X					X		X
6	TP04 - 0.0	Apr 14, 2021		Soil	S21-Ap30461			X					X		X
7	TP05 - 0.0	Apr 14, 2021		Soil	S21-Ap30462			X					X		X
8	TP05 - 0.5	Apr 14, 2021		Soil	S21-Ap30463			X					X		X
9	TP06 - 0.0	Apr 14, 2021		Soil	S21-Ap30464			X					X		X

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Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
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Priority: 5 Day
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Eurofins Analytical Services Manager : Elvis Dsouza

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	TP07 - 0.0	Apr 14, 2021		Soil	S21-Ap30465			X					X		X
11	TP07 - 0.3	Apr 14, 2021		Soil	S21-Ap30466								X		X
12	TP08 - 0.0	Apr 14, 2021		Soil	S21-Ap30467			X					X		X
13	TP09 - 0.0	Apr 14, 2021		Soil	S21-Ap30468			X					X		X
14	TP09 - 0.3	Apr 14, 2021		Soil	S21-Ap30469								X		X
15	TP10 - 0.0	Apr 14, 2021		Soil	S21-Ap30470			X					X		X
16	TP10 - 2.0	Apr 14, 2021		Soil	S21-Ap30471	X					X		X		
17	STP01 - 01	Apr 14, 2021		Soil	S21-Ap30472		X						X		X
18	STP01 - 02	Apr 14, 2021		Soil	S21-Ap30473		X						X		X
19	STP01 - 03	Apr 14, 2021		Soil	S21-Ap30474		X						X		X
20	STP01 - 04	Apr 14, 2021		Soil	S21-Ap30475		X						X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	STP01 - 05	Apr 14, 2021		Soil	S21-Ap30476		X						X		X
22	SS_06_ FRAG	Apr 14, 2021		Building Materials	S21-Ap30477				X						
23	RB_140421	Apr 14, 2021		Water	S21-Ap30478										X
24	SS_01	Apr 14, 2021		Soil	S21-Ap30479							X	X		
25	SS_02	Apr 14, 2021		Soil	S21-Ap30480							X	X		
26	SS_03	Apr 14, 2021		Soil	S21-Ap30481							X	X		
27	SS_04	Apr 14, 2021		Soil	S21-Ap30482							X	X		
28	SS_05	Apr 14, 2021		Soil	S21-Ap30483							X	X		
29	SS_06	Apr 14, 2021		Soil	S21-Ap30484							X	X		
30	TB_140421	Apr 14, 2021		Soil	S21-Ap30485								X	X	

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
31	TP01 - 0.5	Apr 14, 2021		Soil	S21-Ap30486					X					
32	TP01 - 1.4	Apr 14, 2021		Soil	S21-Ap30487					X					
33	TPO2 - 0.3	Apr 14, 2021		Soil	S21-Ap30488					X					
34	TPO2 - 0.5	Apr 14, 2021		Soil	S21-Ap30489					X					
35	TPO2 - 0.1	Apr 14, 2021		Soil	S21-Ap30490					X					
36	TPO3 - 1.0	Apr 14, 2021		Soil	S21-Ap30491					X					
37	TPO4 - 0.3	Apr 14, 2021		Soil	S21-Ap30492					X					
38	TPO4 - 0.5	Apr 14, 2021		Soil	S21-Ap30493					X					
39	TPO4 - 1.0	Apr 14, 2021		Soil	S21-Ap30494					X					
40	TPO5 - 1.0	Apr 14, 2021		Soil	S21-Ap30495					X					
41	TPO5 - 0.3	Apr 14, 2021		Soil	S21-Ap30496					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
42	TPO6 - 0.5	Apr 14, 2021		Soil	S21-Ap30497					X					
43	TPO6 - 1.0	Apr 14, 2021		Soil	S21-Ap30498					X					
44	TPO7 - 0.5	Apr 14, 2021		Soil	S21-Ap30499					X					
45	TPO7 - 1.0	Apr 14, 2021		Soil	S21-Ap30500					X					
46	TPO7 - PAINTFRAG	Apr 14, 2021		Paint	S21-Ap30501					X					
47	TP08 - 0.3	Apr 14, 2021		Soil	S21-Ap30502					X					
48	TP08 - 0.5	Apr 14, 2021		Soil	S21-Ap30503					X					
49	TP08 - 1.0	Apr 14, 2021		Soil	S21-Ap30504					X					
50	TPO9 - 0.5	Apr 14, 2021		Soil	S21-Ap30505					X					
51	TPO9 - 1.0	Apr 14, 2021		Soil	S21-Ap30506					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
52	TP10 - 0.5	Apr 14, 2021		Soil	S21-Ap30507					X					
53	QA101	Apr 14, 2021		Soil	S21-Ap30508					X					
54	POTENTIAL LEAD	Apr 14, 2021		Paint	S21-Ap30509					X					
Test Counts						1	5	13	1	24	1	9	31	2	21

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection and proficiency testing scheme providers
reports.

Attention: Imogen Powell

Report 788342-S
Project name SYDNEY WATER - PITT DOWN
Project ID PS123998
Received Date Apr 16, 2021

Client Sample ID			TP01 - 0.0	TP01 - 0.3	TP02 - 0.0	TP03 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30456	S21-Ap30457	S21-Ap30458	S21-Ap30459
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	75	95	88
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			TP01 - 0.0	TP01 - 0.3	TP02 - 0.0	TP03 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30456	S21-Ap30457	S21-Ap30458	S21-Ap30459
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95	92	93	89
p-Terphenyl-d14 (surr.)	1	%	85	90	86	85
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchloroendate (surr.)	1	%	67	84	73	69
Tetrachloro-m-xylene (surr.)	1	%	120	116	118	118
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			TP01 - 0.0	TP01 - 0.3	TP02 - 0.0	TP03 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30456	S21-Ap30457	S21-Ap30458	S21-Ap30459
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	140	137	130	136
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	67	84	73	69
Tetrachloro-m-xylene (surr.)	1	%	120	116	118	118
Heavy Metals						
Arsenic	2	mg/kg	2.6	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.6	< 5	< 5	< 5
Copper	5	mg/kg	6.7	< 5	< 5	< 5
Lead	5	mg/kg	18	9.9	< 5	9.5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	25	< 5	6.3	39
% Moisture	1	%	12	12	12	6.1

Client Sample ID			TP03 - 0.5	TP04 - 0.0	TP05 - 0.0	TP05 - 0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30460	S21-Ap30461	S21-Ap30462	S21-Ap30463
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	81	63	107	82
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	83	89	81	82
p-Terphenyl-d14 (surr.)	1	%	83	92	91	89

Client Sample ID			TP03 - 0.5	TP04 - 0.0	TP05 - 0.0	TP05 - 0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30460	S21-Ap30461	S21-Ap30462	S21-Ap30463
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchloroendate (surr.)	1	%	87	80	107	65
Tetrachloro-m-xylene (surr.)	1	%	99	116	98	104
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			TP03 - 0.5	TP04 - 0.0	TP05 - 0.0	TP05 - 0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30460	S21-Ap30461	S21-Ap30462	S21-Ap30463
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	137	132	119	119
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	87	80	107	65
Tetrachloro-m-xylene (surr.)	1	%	99	116	98	104
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	< 5	6.5
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	< 5	6.9	9.8	6.8
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	5.0	13	14	8.5
% Moisture	1	%	6.2	8.6	6.5	5.2

Client Sample ID			TP06 - 0.0	TP07 - 0.0	TP07 - 0.3	TP08 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30464	S21-Ap30465	S21-Ap30466	S21-Ap30467
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			TP06 - 0.0	TP07 - 0.0	TP07 - 0.3	TP08 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30464	S21-Ap30465	S21-Ap30466	S21-Ap30467
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	94	92	100	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	84	89	86	80
p-Terphenyl-d14 (surr.)	1	%	92	94	84	90
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			TP06 - 0.0	TP07 - 0.0	TP07 - 0.3	TP08 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30464	S21-Ap30465	S21-Ap30466	S21-Ap30467
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchloroendate (surr.)	1	%	82	74	66	84
Tetrachloro-m-xylene (surr.)	1	%	98	113	122	129
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			TP06 - 0.0	TP07 - 0.0	TP07 - 0.3	TP08 - 0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30464	S21-Ap30465	S21-Ap30466	S21-Ap30467
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	111	118	126	144
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	82	74	66	84
Tetrachloro-m-xylene (surr.)	1	%	98	113	122	129
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.9	5.4	< 5	< 5
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	38	15	5.5	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	26	14	7.2	16
% Moisture	1	%	5.4	6.8	6.2	4.6

Client Sample ID			TP09 - 0.0	TP09 - 0.3	TP10 - 0.0	TP10 - 2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30468	S21-Ap30469	S21-Ap30470	S21-Ap30471
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 100	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 250	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 250	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 250	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	95	97	95	-

Client Sample ID			TP09 - 0.0	TP09 - 0.3	TP10 - 0.0	TP10 - 2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30468	S21-Ap30469	S21-Ap30470	S21-Ap30471
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 250	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 250	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 500	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 500	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 500	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	70	91	83	-
p-Terphenyl-d14 (surr.)	1	%	86	85	85	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 1	< 0.1	< 0.1	-
4,4'-DDD	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
4,4'-DDE	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
4,4'-DDT	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-

Client Sample ID			TP09 - 0.0	TP09 - 0.3	TP10 - 0.0	TP10 - 2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30468	S21-Ap30469	S21-Ap30470	S21-Ap30471
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Toxaphene	0.1	mg/kg	< 10	< 0.1	< 0.1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.5	< 0.05	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 1	< 0.2	< 0.2	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 1	< 0.2	< 0.2	-
Dibutylchlorodate (surr.)	1	%	96	60	58	-
Tetrachloro-m-xylene (surr.)	1	%	106	111	114	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Bolstar	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Coumaphos	2	mg/kg	< 5	< 2	< 2	-
Demeton-S	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Dimethoate	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
EPN	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Malathion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Monocrotophos	2	mg/kg	< 5	< 2	< 2	-
Naled	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Omethoate	2	mg/kg	< 5	< 2	< 2	-
Phorate	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Ronnel	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Terbufos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.5	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	98	112	110	-

Client Sample ID			TP09 - 0.0	TP09 - 0.3	TP10 - 0.0	TP10 - 2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30468	S21-Ap30469	S21-Ap30470	S21-Ap30471
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Aroclor-1221	0.1	mg/kg	< 1	< 0.1	< 0.1	-
Aroclor-1232	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Total PCB*	0.5	mg/kg	< 1	< 0.5	< 0.5	-
Dibutylchlorodate (surr.)	1	%	96	60	58	-
Tetrachloro-m-xylene (surr.)	1	%	106	111	114	-
Heavy Metals						
Arsenic	2	mg/kg	2.0	< 2	< 2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	6.3	< 5	< 5	-
Copper	5	mg/kg	< 5	< 5	5.5	-
Lead	5	mg/kg	31	21	38	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	38	23	47	-
% Moisture	1	%	2.7	18	8.5	6.5
% Clay	1	%	-	-	-	6.0
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	-	7.8

Client Sample ID			STP01 - 01	STP01 - 02	STP01 - 03	STP01 - 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30472	S21-Ap30473	S21-Ap30474	S21-Ap30475
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	95	93	83	64
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			STP01 - 01	STP01 - 02	STP01 - 03	STP01 - 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30472	S21-Ap30473	S21-Ap30474	S21-Ap30475
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
2-Fluorobiphenyl (surr.)	1	%	93	92	86	89
p-Terphenyl-d14 (surr.)	1	%	108	102	102	97
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			STP01 - 01	STP01 - 02	STP01 - 03	STP01 - 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30472	S21-Ap30473	S21-Ap30474	S21-Ap30475
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	INT	INT	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	107	104	98	96
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	144	133	133	121
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			STP01 - 01	STP01 - 02	STP01 - 03	STP01 - 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30472	S21-Ap30473	S21-Ap30474	S21-Ap30475
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchloredate (surr.)	1	%	INT	INT	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	107	104	98	96
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.4	5.1	5.1	5.2
Copper	5	mg/kg	< 5	< 5	5.9	5.5
Lead	5	mg/kg	25	75	120	140
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	23	37	30	79
% Moisture	1	%	5.2	16	15	30

Client Sample ID			SS _ 01	SS _ 02	SS _ 03	SS _ 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30479	S21-Ap30480	S21-Ap30481	S21-Ap30482
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchloredate (surr.)	1	%	INT	INT	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	102	94	97	100

Client Sample ID			SS _ 01	SS _ 02	SS _ 03	SS _ 04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30479	S21-Ap30480	S21-Ap30481	S21-Ap30482
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	131	112	142	147
% Moisture	1	%	7.2	3.8	7.4	9.3

Client Sample ID			SS _ 05	SS _ 06	TB _ 140421
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30483	S21-Ap30484	S21-Ap30485
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50
BTEX					
Benzene	0.1	mg/kg	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	58
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-
Dibutylchloroendate (surr.)	1	%	INT	INT	-
Tetrachloro-m-xylene (surr.)	1	%	101	99	-

Client Sample ID			SS _ 05	SS _ 06	TB _ 140421
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Ap30483	S21-Ap30484	S21-Ap30485
Date Sampled			Apr 14, 2021	Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit			
Organophosphorus Pesticides					
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	-
Coumaphos	2	mg/kg	< 2	< 2	-
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-
EPN	0.2	mg/kg	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-
Malathion	0.2	mg/kg	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-
Monocrotophos	2	mg/kg	< 2	< 2	-
Naled	0.2	mg/kg	< 0.2	< 0.2	-
Omethoate	2	mg/kg	< 2	< 2	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-
Terbufos	0.2	mg/kg	< 0.2	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	141	140	-
% Moisture	1	%	9.0	11	19

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 22, 2021	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 22, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 22, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 22, 2021	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Apr 22, 2021	14 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Apr 22, 2021	14 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	Apr 22, 2021	14 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Apr 22, 2021	28 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Apr 22, 2021	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Apr 19, 2021	14 Days
% Clay - Method: LTM-GEN-7040	Brisbane	Apr 23, 2021	14 Days
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Sydney	Apr 22, 2021	7 Days

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
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NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
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Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

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Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	TP01 - 0.0	Apr 14, 2021		Soil	S21-Ap30456			X					X		X
2	TP01 - 0.3	Apr 14, 2021		Soil	S21-Ap30457			X					X		X
3	TP02 - 0.0	Apr 14, 2021		Soil	S21-Ap30458			X					X		X
4	TP03 - 0.0	Apr 14, 2021		Soil	S21-Ap30459			X					X		X
5	TP03 - 0.5	Apr 14, 2021		Soil	S21-Ap30460			X					X		X
6	TP04 - 0.0	Apr 14, 2021		Soil	S21-Ap30461			X					X		X
7	TP05 - 0.0	Apr 14, 2021		Soil	S21-Ap30462			X					X		X
8	TP05 - 0.5	Apr 14, 2021		Soil	S21-Ap30463			X					X		X
9	TP06 - 0.0	Apr 14, 2021		Soil	S21-Ap30464			X					X		X

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Perth
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Welshpool WA 6106
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Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	TP07 - 0.0	Apr 14, 2021		Soil	S21-Ap30465			X					X		X
11	TP07 - 0.3	Apr 14, 2021		Soil	S21-Ap30466								X		X
12	TP08 - 0.0	Apr 14, 2021		Soil	S21-Ap30467			X					X		X
13	TP09 - 0.0	Apr 14, 2021		Soil	S21-Ap30468			X					X		X
14	TP09 - 0.3	Apr 14, 2021		Soil	S21-Ap30469								X		X
15	TP10 - 0.0	Apr 14, 2021		Soil	S21-Ap30470			X					X		X
16	TP10 - 2.0	Apr 14, 2021		Soil	S21-Ap30471	X					X		X		
17	STP01 - 01	Apr 14, 2021		Soil	S21-Ap30472		X						X		X
18	STP01 - 02	Apr 14, 2021		Soil	S21-Ap30473		X						X		X
19	STP01 - 03	Apr 14, 2021		Soil	S21-Ap30474		X						X		X
20	STP01 - 04	Apr 14, 2021		Soil	S21-Ap30475		X						X		X

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Murarrie QLD 4172
Phone : +61 7 3902 4600
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Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	STP01 - 05	Apr 14, 2021		Soil	S21-Ap30476		X						X		X
22	SS_06_ FRAG	Apr 14, 2021		Building Materials	S21-Ap30477				X						
23	RB_140421	Apr 14, 2021		Water	S21-Ap30478										X
24	SS_01	Apr 14, 2021		Soil	S21-Ap30479							X	X		
25	SS_02	Apr 14, 2021		Soil	S21-Ap30480							X	X		
26	SS_03	Apr 14, 2021		Soil	S21-Ap30481							X	X		
27	SS_04	Apr 14, 2021		Soil	S21-Ap30482							X	X		
28	SS_05	Apr 14, 2021		Soil	S21-Ap30483							X	X		
29	SS_06	Apr 14, 2021		Soil	S21-Ap30484							X	X		
30	TB_140421	Apr 14, 2021		Soil	S21-Ap30485								X	X	

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Melbourne
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Dandenong South VIC 3175
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NATA # 1261
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Sydney
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16 Mars Road
Lane Cove West NSW 2066
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Brisbane
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Perth
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Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
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IANZ # 1327

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
31	TP01 - 0.5	Apr 14, 2021		Soil	S21-Ap30486					X					
32	TP01 - 1.4	Apr 14, 2021		Soil	S21-Ap30487					X					
33	TPO2 - 0.3	Apr 14, 2021		Soil	S21-Ap30488					X					
34	TPO2 - 0.5	Apr 14, 2021		Soil	S21-Ap30489					X					
35	TPO2 - 0.1	Apr 14, 2021		Soil	S21-Ap30490					X					
36	TPO3 - 1.0	Apr 14, 2021		Soil	S21-Ap30491					X					
37	TPO4 - 0.3	Apr 14, 2021		Soil	S21-Ap30492					X					
38	TPO4 - 0.5	Apr 14, 2021		Soil	S21-Ap30493					X					
39	TPO4 - 1.0	Apr 14, 2021		Soil	S21-Ap30494					X					
40	TPO5 - 1.0	Apr 14, 2021		Soil	S21-Ap30495					X					
41	TPO5 - 0.3	Apr 14, 2021		Soil	S21-Ap30496					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
42	TPO6 - 0.5	Apr 14, 2021		Soil	S21-Ap30497					X					
43	TPO6 - 1.0	Apr 14, 2021		Soil	S21-Ap30498					X					
44	TPO7 - 0.5	Apr 14, 2021		Soil	S21-Ap30499					X					
45	TPO7 - 1.0	Apr 14, 2021		Soil	S21-Ap30500					X					
46	TPO7 - PAINTFRAG	Apr 14, 2021		Paint	S21-Ap30501					X					
47	TP08 - 0.3	Apr 14, 2021		Soil	S21-Ap30502					X					
48	TP08 - 0.5	Apr 14, 2021		Soil	S21-Ap30503					X					
49	TP08 - 1.0	Apr 14, 2021		Soil	S21-Ap30504					X					
50	TPO9 - 0.5	Apr 14, 2021		Soil	S21-Ap30505					X					
51	TPO9 - 1.0	Apr 14, 2021		Soil	S21-Ap30506					X					

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Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
52	TP10 - 0.5	Apr 14, 2021		Soil	S21-Ap30507					X					
53	QA101	Apr 14, 2021		Soil	S21-Ap30508					X					
54	POTENTIAL LEAD	Apr 14, 2021		Paint	S21-Ap30509					X					
Test Counts						1	5	13	1	24	1	9	31	2	21

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	101			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	97			70-130	Pass	
Toluene	%	95			70-130	Pass	
Ethylbenzene	%	97			70-130	Pass	
m&p-Xylenes	%	93			70-130	Pass	
o-Xylene	%	96			70-130	Pass	
Xylenes - Total*	%	94			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	97			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
TRH >C10-C16	%	97			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	87			70-130	Pass	
Acenaphthylene	%	91			70-130	Pass	
Anthracene	%	80			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	100			70-130	Pass	
Benzo(b&i)fluoranthene	%	90			70-130	Pass	
Benzo(g,h,i)perylene	%	115			70-130	Pass	
Benzo(k)fluoranthene	%	93			70-130	Pass	
Chrysene	%	93			70-130	Pass	
Dibenz(a,h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	70			70-130	Pass	
Fluorene	%	88			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	112			70-130	Pass	
Naphthalene	%	88			70-130	Pass	
Phenanthrene	%	73			70-130	Pass	
Pyrene	%	70			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	77			70-130	Pass	
4,4'-DDD	%	75			70-130	Pass	
4,4'-DDE	%	76			70-130	Pass	
4,4'-DDT	%	110			70-130	Pass	
a-BHC	%	78			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aldrin			%	76			70-130	Pass	
b-BHC			%	84			70-130	Pass	
d-BHC			%	89			70-130	Pass	
Dieldrin			%	85			70-130	Pass	
Endosulfan I			%	75			70-130	Pass	
Endosulfan II			%	72			70-130	Pass	
Endosulfan sulphate			%	83			70-130	Pass	
Endrin			%	118			70-130	Pass	
Endrin aldehyde			%	81			70-130	Pass	
Endrin ketone			%	91			70-130	Pass	
g-BHC (Lindane)			%	90			70-130	Pass	
Heptachlor			%	92			70-130	Pass	
Heptachlor epoxide			%	85			70-130	Pass	
Hexachlorobenzene			%	83			70-130	Pass	
Methoxychlor			%	123			70-130	Pass	
LCS - % Recovery									
Organophosphorus Pesticides									
Diazinon			%	74			70-130	Pass	
Dimethoate			%	91			70-130	Pass	
Ethion			%	127			70-130	Pass	
Fenitrothion			%	92			70-130	Pass	
Methyl parathion			%	105			70-130	Pass	
Mevinphos			%	126			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1016			%	70			70-130	Pass	
Aroclor-1260			%	126			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	112			80-120	Pass	
Cadmium			%	112			80-120	Pass	
Chromium			%	112			80-120	Pass	
Copper			%	110			80-120	Pass	
Lead			%	114			80-120	Pass	
Mercury			%	112			80-120	Pass	
Nickel			%	111			80-120	Pass	
Zinc			%	108			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Ap30233	NCP	%	110			70-130	Pass	
Acenaphthylene	S21-Ap30233	NCP	%	121			70-130	Pass	
Anthracene	S21-Ap30233	NCP	%	106			70-130	Pass	
Benz(a)anthracene	S21-Ap30233	NCP	%	110			70-130	Pass	
Benzo(a)pyrene	S21-Ap30233	NCP	%	119			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Ap30233	NCP	%	110			70-130	Pass	
Benzo(g,h,i)perylene	S21-Ap37339	NCP	%	107			70-130	Pass	
Benzo(k)fluoranthene	S21-Ap30233	NCP	%	115			70-130	Pass	
Chrysene	S21-Ap30233	NCP	%	115			70-130	Pass	
Dibenz(a,h)anthracene	S21-Ap37339	NCP	%	97			70-130	Pass	
Fluoranthene	S21-Ap30233	NCP	%	98			70-130	Pass	
Fluorene	S21-Ap30233	NCP	%	112			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Ap37339	NCP	%	103			70-130	Pass	
Naphthalene	S21-Ap30233	NCP	%	112			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Phenanthrene	S21-Ap30233	NCP	%	97		70-130	Pass	
Pyrene	S21-Ap30233	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Organophosphorus Pesticides				Result 1				
Diazinon	S21-Ap37339	NCP	%	81		70-130	Pass	
Dimethoate	S21-Ap37339	NCP	%	80		70-130	Pass	
Ethion	S21-Ap37339	NCP	%	105		70-130	Pass	
Fenitrothion	S21-Ap37339	NCP	%	96		70-130	Pass	
Methyl parathion	S21-Ap37339	NCP	%	109		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Lead	S21-Ap30633	NCP	%	102		75-125	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	S21-Ap30461	CP	%	104		70-130	Pass	
TRH C10-C14	S21-Ap30461	CP	%	83		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S21-Ap30461	CP	%	101		70-130	Pass	
Toluene	S21-Ap30461	CP	%	97		70-130	Pass	
Ethylbenzene	S21-Ap30461	CP	%	100		70-130	Pass	
m&p-Xylenes	S21-Ap30461	CP	%	96		70-130	Pass	
o-Xylene	S21-Ap30461	CP	%	98		70-130	Pass	
Xylenes - Total*	S21-Ap30461	CP	%	96		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S21-Ap30461	CP	%	92		70-130	Pass	
TRH C6-C10	S21-Ap30461	CP	%	100		70-130	Pass	
TRH >C10-C16	S21-Ap30461	CP	%	80		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S21-Ap30465	CP	%	116		75-125	Pass	
Cadmium	S21-Ap30465	CP	%	119		75-125	Pass	
Chromium	S21-Ap30465	CP	%	116		75-125	Pass	
Copper	S21-Ap30465	CP	%	113		75-125	Pass	
Mercury	S21-Ap30465	CP	%	116		75-125	Pass	
Nickel	S21-Ap30465	CP	%	115		75-125	Pass	
Zinc	S21-Ap30465	CP	%	116		75-125	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
Chlordanes - Total	S21-Ap30467	CP	%	83		70-130	Pass	
4,4'-DDD	S21-Ap30467	CP	%	80		70-130	Pass	
4,4'-DDE	S21-Ap30467	CP	%	72		70-130	Pass	
4,4'-DDT	S21-Ap30467	CP	%	112		70-130	Pass	
a-BHC	S21-Ap30467	CP	%	75		70-130	Pass	
Aldrin	S21-Ap30467	CP	%	81		70-130	Pass	
Dieldrin	S21-Ap30467	CP	%	80		70-130	Pass	
Endosulfan I	S21-Ap30467	CP	%	80		70-130	Pass	
Endosulfan II	S21-Ap30467	CP	%	75		70-130	Pass	
Endosulfan sulphate	S21-Ap30467	CP	%	87		70-130	Pass	
Endrin	S21-Ap30467	CP	%	98		70-130	Pass	
Endrin aldehyde	S21-Ap30467	CP	%	85		70-130	Pass	
Endrin ketone	S21-Ap30467	CP	%	97		70-130	Pass	
g-BHC (Lindane)	S21-Ap30467	CP	%	87		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	S21-Ap30467	CP	%	93			70-130	Pass	
Hexachlorobenzene	S21-Ap30467	CP	%	86			70-130	Pass	
Methoxychlor	S21-Ap30467	CP	%	110			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Ap30472	CP	%	95			70-130	Pass	
TRH C10-C14	S21-Ap30472	CP	%	120			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Ap30472	CP	%	88			70-130	Pass	
Toluene	S21-Ap30472	CP	%	86			70-130	Pass	
Ethylbenzene	S21-Ap30472	CP	%	89			70-130	Pass	
m&p-Xylenes	S21-Ap30472	CP	%	89			70-130	Pass	
o-Xylene	S21-Ap30472	CP	%	95			70-130	Pass	
Xylenes - Total*	S21-Ap30472	CP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S21-Ap30472	CP	%	88			70-130	Pass	
TRH C6-C10	S21-Ap30472	CP	%	92			70-130	Pass	
TRH >C10-C16	S21-Ap30472	CP	%	124			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
b-BHC	S21-Ap41281	NCP	%	85			70-130	Pass	
d-BHC	S21-Ap41281	NCP	%	92			70-130	Pass	
Heptachlor epoxide	S21-Ap41281	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Mevinphos	S21-Ap41281	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S21-Ap41281	NCP	%	86			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-Ap30456	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-Ap30456	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S21-Ap30456	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S21-Ap30456	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S21-Ap30456	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Tokuthion	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S21-Ap30456	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S21-Ap30456	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Total PCB*	S21-Ap30456	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S21-Ap30460	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S21-Ap30460	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S21-Ap30460	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S21-Ap30460	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTX				Result 1	Result 2	RPD		
Benzene	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S21-Ap30460	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S21-Ap30460	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S21-Ap30460	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S21-Ap30460	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S21-Ap30460	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-Ap30460	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S21-Ap30460	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S21-Ap30460	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S21-Ap30460	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Tokuthion	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S21-Ap30460	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S21-Ap30460	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Total PCB*	S21-Ap30460	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Ap30464	CP	mg/kg	< 2	< 2	<1	30%	Pass
Cadmium	S21-Ap30464	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S21-Ap30464	CP	mg/kg	5.9	< 5	46	30%	Fail
Copper	S21-Ap30464	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S21-Ap30464	CP	mg/kg	38	41	8.0	30%	Pass
Mercury	S21-Ap30464	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S21-Ap30464	CP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-Ap30464	CP	%	5.4	5.3	1.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S21-Ap30470	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S21-Ap30470	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S21-Ap30470	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S21-Ap30470	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S21-Ap30470	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S21-Ap30470	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S21-Ap30470	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S21-Ap30470	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S21-Ap30470	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
pH (1:5 Aqueous extract at 25°C as rec.)	S21-Ap30471	CP	pH Units	7.8	7.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-Ap30474	CP	%	15	16	6.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Ap30475	CP	mg/kg	< 2	< 2	<1	30%	Pass
Cadmium	S21-Ap30475	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S21-Ap30475	CP	mg/kg	5.2	< 5	29	30%	Pass
Copper	S21-Ap30475	CP	mg/kg	5.5	5.9	6.0	30%	Pass
Mercury	S21-Ap30475	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S21-Ap30475	CP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S21-Ap30475	CP	mg/kg	79	78	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-Ap30479	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-Ap30479	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S21-Ap30479	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S21-Ap30479	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S21-Ap30479	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Tokuthion	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S21-Ap30479	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Elvis Dsouza	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Charl Du Preez	Senior Analyst-Inorganic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Inorganic (QLD)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection and proficiency testing scheme providers
reports.

Attention: Imogen Powell

Report **788342-W**
Project name **SYDNEY WATER - PITT DOWN**
Project ID **PS123998**
Received Date **Apr 16, 2021**

Client Sample ID			RB _ 140421
Sample Matrix			Water
Eurofins Sample No.			S21-Ap30478
Date Sampled			Apr 14, 2021
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001

Client Sample ID			RB _ 140421
Sample Matrix			Water
Eurofins Sample No.			S21-Ap30478
Date Sampled			Apr 14, 2021
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	125
p-Terphenyl-d14 (surr.)	1	%	134
Organochlorine Pesticides			
Chlordanes - Total	0.002	mg/L	< 0.002
4.4'-DDD	0.0001	mg/L	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001
Endrin	0.0001	mg/L	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001
Methoxychlor	0.0002	mg/L	< 0.0002
Toxaphene	0.001	mg/L	< 0.001
Aldrin and Dieldrin (Total)*	0.0002	mg/L	< 0.0002
DDT + DDE + DDD (Total)*	0.0002	mg/L	< 0.0002
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	< 0.002
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	< 0.002
Dibutylchloroendate (surr.)	1	%	92
Tetrachloro-m-xylene (surr.)	1	%	147
Organophosphorus Pesticides			
Azinphos-methyl	0.002	mg/L	< 0.002
Bolstar	0.002	mg/L	< 0.002
Chlorfenvinphos	0.002	mg/L	< 0.002
Chlorpyrifos	0.02	mg/L	< 0.02
Chlorpyrifos-methyl	0.002	mg/L	< 0.002
Coumaphos	0.02	mg/L	< 0.02
Demeton-S	0.02	mg/L	< 0.02
Demeton-O	0.002	mg/L	< 0.002
Diazinon	0.002	mg/L	< 0.002
Dichlorvos	0.002	mg/L	< 0.002
Dimethoate	0.002	mg/L	< 0.002
Disulfoton	0.002	mg/L	< 0.002
EPN	0.002	mg/L	< 0.002

Client Sample ID			RB _ 140421
Sample Matrix			Water
Eurofins Sample No.			S21-Ap30478
Date Sampled			Apr 14, 2021
Test/Reference	LOR	Unit	
Organophosphorus Pesticides			
Ethion	0.002	mg/L	< 0.002
Ethoprop	0.002	mg/L	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002
Fenitrothion	0.002	mg/L	< 0.002
Fensulfothion	0.002	mg/L	< 0.002
Fenthion	0.002	mg/L	< 0.002
Malathion	0.002	mg/L	< 0.002
Merphos	0.002	mg/L	< 0.002
Methyl parathion	0.002	mg/L	< 0.002
Mevinphos	0.002	mg/L	< 0.002
Monocrotophos	0.002	mg/L	< 0.002
Naled	0.002	mg/L	< 0.002
Omethoate	0.002	mg/L	< 0.002
Phorate	0.002	mg/L	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02
Pyrazophos	0.002	mg/L	< 0.002
Ronnel	0.002	mg/L	< 0.002
Terbufos	0.002	mg/L	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002
Tokuthion	0.002	mg/L	< 0.002
Trichloronate	0.002	mg/L	< 0.002
Triphenylphosphate (surr.)	1	%	INT
Polychlorinated Biphenyls			
Aroclor-1016	0.005	mg/L	< 0.005
Aroclor-1221	0.001	mg/L	< 0.001
Aroclor-1232	0.005	mg/L	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005
Total PCB*	0.001	mg/L	< 0.001
Dibutylchlorodate (surr.)	1	%	92
Tetrachloro-m-xylene (surr.)	1	%	147
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 19, 2021	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 19, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 19, 2021	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 19, 2021	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Apr 19, 2021	7 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Apr 19, 2021	7 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	Apr 19, 2021	7 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Apr 19, 2021	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Apr 19, 2021	180 Days

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	TP01 - 0.0	Apr 14, 2021		Soil	S21-Ap30456			X					X		X
2	TP01 - 0.3	Apr 14, 2021		Soil	S21-Ap30457			X					X		X
3	TP02 - 0.0	Apr 14, 2021		Soil	S21-Ap30458			X					X		X
4	TP03 - 0.0	Apr 14, 2021		Soil	S21-Ap30459			X					X		X
5	TP03 - 0.5	Apr 14, 2021		Soil	S21-Ap30460			X					X		X
6	TP04 - 0.0	Apr 14, 2021		Soil	S21-Ap30461			X					X		X
7	TP05 - 0.0	Apr 14, 2021		Soil	S21-Ap30462			X					X		X
8	TP05 - 0.5	Apr 14, 2021		Soil	S21-Ap30463			X					X		X
9	TP06 - 0.0	Apr 14, 2021		Soil	S21-Ap30464			X					X		X

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	TP07 - 0.0	Apr 14, 2021		Soil	S21-Ap30465			X					X		X
11	TP07 - 0.3	Apr 14, 2021		Soil	S21-Ap30466								X		X
12	TP08 - 0.0	Apr 14, 2021		Soil	S21-Ap30467			X					X		X
13	TP09 - 0.0	Apr 14, 2021		Soil	S21-Ap30468			X					X		X
14	TP09 - 0.3	Apr 14, 2021		Soil	S21-Ap30469								X		X
15	TP10 - 0.0	Apr 14, 2021		Soil	S21-Ap30470			X					X		X
16	TP10 - 2.0	Apr 14, 2021		Soil	S21-Ap30471	X					X		X		
17	STP01 - 01	Apr 14, 2021		Soil	S21-Ap30472		X						X		X
18	STP01 - 02	Apr 14, 2021		Soil	S21-Ap30473		X						X		X
19	STP01 - 03	Apr 14, 2021		Soil	S21-Ap30474		X						X		X
20	STP01 - 04	Apr 14, 2021		Soil	S21-Ap30475		X						X		X

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	STP01 - 05	Apr 14, 2021		Soil	S21-Ap30476		X						X		X
22	SS_06_ FRAG	Apr 14, 2021		Building Materials	S21-Ap30477				X						
23	RB_140421	Apr 14, 2021		Water	S21-Ap30478										X
24	SS_01	Apr 14, 2021		Soil	S21-Ap30479							X	X		
25	SS_02	Apr 14, 2021		Soil	S21-Ap30480							X	X		
26	SS_03	Apr 14, 2021		Soil	S21-Ap30481							X	X		
27	SS_04	Apr 14, 2021		Soil	S21-Ap30482							X	X		
28	SS_05	Apr 14, 2021		Soil	S21-Ap30483							X	X		
29	SS_06	Apr 14, 2021		Soil	S21-Ap30484							X	X		
30	TB_140421	Apr 14, 2021		Soil	S21-Ap30485								X	X	

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Dandenong South VIC 3175
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NATA # 1261
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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
31	TP01 - 0.5	Apr 14, 2021		Soil	S21-Ap30486					X					
32	TP01 - 1.4	Apr 14, 2021		Soil	S21-Ap30487					X					
33	TPO2 - 0.3	Apr 14, 2021		Soil	S21-Ap30488					X					
34	TPO2 - 0.5	Apr 14, 2021		Soil	S21-Ap30489					X					
35	TPO2 - 0.1	Apr 14, 2021		Soil	S21-Ap30490					X					
36	TPO3 - 1.0	Apr 14, 2021		Soil	S21-Ap30491					X					
37	TPO4 - 0.3	Apr 14, 2021		Soil	S21-Ap30492					X					
38	TPO4 - 0.5	Apr 14, 2021		Soil	S21-Ap30493					X					
39	TPO4 - 1.0	Apr 14, 2021		Soil	S21-Ap30494					X					
40	TPO5 - 1.0	Apr 14, 2021		Soil	S21-Ap30495					X					
41	TPO5 - 0.3	Apr 14, 2021		Soil	S21-Ap30496					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
42	TPO6 - 0.5	Apr 14, 2021		Soil	S21-Ap30497					X					
43	TPO6 - 1.0	Apr 14, 2021		Soil	S21-Ap30498					X					
44	TPO7 - 0.5	Apr 14, 2021		Soil	S21-Ap30499					X					
45	TPO7 - 1.0	Apr 14, 2021		Soil	S21-Ap30500					X					
46	TPO7 - PAINTFRAG	Apr 14, 2021		Paint	S21-Ap30501					X					
47	TP08 - 0.3	Apr 14, 2021		Soil	S21-Ap30502					X					
48	TP08 - 0.5	Apr 14, 2021		Soil	S21-Ap30503					X					
49	TP08 - 1.0	Apr 14, 2021		Soil	S21-Ap30504					X					
50	TPO9 - 0.5	Apr 14, 2021		Soil	S21-Ap30505					X					
51	TPO9 - 1.0	Apr 14, 2021		Soil	S21-Ap30506					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
52	TP10 - 0.5	Apr 14, 2021		Soil	S21-Ap30507					X					
53	QA101	Apr 14, 2021		Soil	S21-Ap30508					X					
54	POTENTIAL LEAD	Apr 14, 2021		Paint	S21-Ap30509					X					
Test Counts						1	5	13	1	24	1	9	31	2	21

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.002			0.002	Pass	
4,4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0002			0.0002	Pass	
Toxaphene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.02			0.02	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	97			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	97			70-130	Pass	
Ethylbenzene	%	97			70-130	Pass	
m&p-Xylenes	%	96			70-130	Pass	
o-Xylene	%	98			70-130	Pass	
Xylenes - Total*	%	97			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
TRH >C10-C16	%	86			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	72			70-130	Pass	
Acenaphthylene	%	74			70-130	Pass	
Anthracene	%	74			70-130	Pass	
Benz(a)anthracene	%	75			70-130	Pass	
Benzo(a)pyrene	%	76			70-130	Pass	
Benzo(b&i)fluoranthene	%	77			70-130	Pass	
Benzo(g,h,i)perylene	%	81			70-130	Pass	
Benzo(k)fluoranthene	%	86			70-130	Pass	
Chrysene	%	76			70-130	Pass	
Dibenz(a,h)anthracene	%	77			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	70			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	80			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
Phenanthrene	%	82			70-130	Pass	
Pyrene	%	87			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	121			70-130	Pass	
4,4'-DDD	%	71			70-130	Pass	
4,4'-DDE	%	95			70-130	Pass	
4,4'-DDT	%	86			70-130	Pass	
a-BHC	%	76			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aldrin			%	91			70-130	Pass	
b-BHC			%	97			70-130	Pass	
d-BHC			%	94			70-130	Pass	
Dieldrin			%	91			70-130	Pass	
Endosulfan I			%	105			70-130	Pass	
Endosulfan II			%	97			70-130	Pass	
Endosulfan sulphate			%	72			70-130	Pass	
Endrin			%	78			70-130	Pass	
Endrin aldehyde			%	74			70-130	Pass	
Endrin ketone			%	80			70-130	Pass	
g-BHC (Lindane)			%	70			70-130	Pass	
Heptachlor			%	74			70-130	Pass	
Heptachlor epoxide			%	99			70-130	Pass	
Hexachlorobenzene			%	72			70-130	Pass	
Methoxychlor			%	99			70-130	Pass	
LCS - % Recovery									
Organophosphorus Pesticides									
Diazinon		%	70				70-130	Pass	
Dimethoate		%	72				70-130	Pass	
Ethion		%	111				70-130	Pass	
Fenitrothion		%	75				70-130	Pass	
Methyl parathion		%	76				70-130	Pass	
Mevinphos		%	106				70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1016		%	73				70-130	Pass	
Aroclor-1260		%	106				70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic		%	101				80-120	Pass	
Cadmium		%	99				80-120	Pass	
Chromium		%	94				80-120	Pass	
Copper		%	90				80-120	Pass	
Lead		%	93				80-120	Pass	
Mercury		%	98				80-120	Pass	
Nickel		%	92				80-120	Pass	
Zinc		%	92				80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Ap26478	NCP	%	99			70-130	Pass	
TRH C10-C14	S21-Ap11278	NCP	%	70			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Ap26478	NCP	%	96			70-130	Pass	
Toluene	S21-Ap26478	NCP	%	94			70-130	Pass	
Ethylbenzene	S21-Ap26478	NCP	%	94			70-130	Pass	
m&p-Xylenes	S21-Ap26478	NCP	%	88			70-130	Pass	
o-Xylene	S21-Ap26478	NCP	%	93			70-130	Pass	
Xylenes - Total*	S21-Ap26478	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	S21-Ap26478	NCP	%	109			70-130	Pass	
TRH >C10-C16	S21-Ap11317	NCP	%	71			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Ap32132	NCP	%	104			75-125	Pass	
Cadmium	S21-Ap32132	NCP	%	102			75-125	Pass	
Chromium	S21-Ap32132	NCP	%	96			75-125	Pass	
Copper	S21-Ap32132	NCP	%	90			75-125	Pass	
Lead	S21-Ap32132	NCP	%	92			75-125	Pass	
Mercury	S21-Ap32132	NCP	%	98			75-125	Pass	
Nickel	S21-Ap32132	NCP	%	92			75-125	Pass	
Zinc	S21-Ap32132	NCP	%	91			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Ap27093	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S21-Ap11287	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S21-Ap11287	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S21-Ap11287	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Ap27093	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S21-Ap27093	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S21-Ap27093	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S21-Ap27093	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S21-Ap27093	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S21-Ap27093	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Ap27093	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S21-Ap27093	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S21-Ap11287	NCP	mg/L	0.11	0.09	14	30%	Pass	
TRH >C16-C34	S21-Ap11287	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S21-Ap11287	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Ap32128	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Cadmium	S21-Ap32128	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S21-Ap32128	NCP	mg/L	0.002	0.001	18	30%	Pass	
Copper	S21-Ap32128	NCP	mg/L	0.003	0.002	8.0	30%	Pass	
Lead	S21-Ap32128	NCP	mg/L	0.005	0.003	32	30%	Fail	Q15
Mercury	S21-Ap32128	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S21-Ap32128	NCP	mg/L	0.002	0.002	15	30%	Pass	
Zinc	S21-Ap32128	NCP	mg/L	0.008	0.009	10	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Elvis Dsouza	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025-Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection and proficiency testing scheme providers
 reports.

Attention: Imogen Powell
Report 788342-AID
Project Name SYDNEY WATER - PITT DOWN
Project ID PS123998
Received Date Apr 16, 2021
Date Reported Apr 28, 2021

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral
 Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.

NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil
 Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.

NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-
 containing material
 (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.

NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).

The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name SYDNEY WATER - PITT DOWN
Project ID PS123998
Date Sampled Apr 14, 2021
Report 788342-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP01 - 0.0	21-Ap30456	Apr 14, 2021	Approximate Sample 518g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP01 - 0.3	21-Ap30457	Apr 14, 2021	Approximate Sample 500g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP02 - 0.0	21-Ap30458	Apr 14, 2021	Approximate Sample 622g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP03 - 0.0	21-Ap30459	Apr 14, 2021	Approximate Sample 857g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP03 - 0.5	21-Ap30460	Apr 14, 2021	Approximate Sample 830g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP04 - 0.0	21-Ap30461	Apr 14, 2021	Approximate Sample 732g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP05 - 0.0	21-Ap30462	Apr 14, 2021	Approximate Sample 681g Sample consisted of: Brown coarse-grained sandy soil and rocks	ACM: Chrysotile, amosite and crocidolite asbestos detected in fibre cement fragments. Approximate raw weight of ACM = 6.9g Total estimated asbestos content in ACM = 0.69g* Total estimated asbestos concentration in ACM = 0.10% w/w* Organic fibre detected. No trace asbestos detected.
TP05 - 0.5	21-Ap30463	Apr 14, 2021	Approximate Sample 647g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP06 - 0.0	21-Ap30464	Apr 14, 2021	Approximate Sample 740g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP07 - 0.0	21-Ap30465	Apr 14, 2021	Approximate Sample 769g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP08 - 0.0	21-Ap30467	Apr 14, 2021	Approximate Sample 758g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP09 - 0.0	21-Ap30468	Apr 14, 2021	Approximate Sample 885g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP10 - 0.0	21-Ap30470	Apr 14, 2021	Approximate Sample 777g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
STP01 - 01	21-Ap30472	Apr 14, 2021	Approximate Sample 145g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
STP01 - 02	21-Ap30473	Apr 14, 2021	Approximate Sample 160g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
STP01 - 03	21-Ap30474	Apr 14, 2021	Approximate Sample 86g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
STP01 - 04	21-Ap30475	Apr 14, 2021	Approximate Sample 146g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
STP01 - 05	21-Ap30476	Apr 14, 2021	Approximate Sample 108g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
SS _ 06_ FRAG	21-Ap30477	Apr 14, 2021	Approximate Sample 3g / 50x20x4mm Sample consisted of: grey fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Apr 19, 2021	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 19, 2021	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 19, 2021	Indefinite

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland
35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	TP01 - 0.0	Apr 14, 2021		Soil	S21-Ap30456			X					X		X
2	TP01 - 0.3	Apr 14, 2021		Soil	S21-Ap30457			X					X		X
3	TP02 - 0.0	Apr 14, 2021		Soil	S21-Ap30458			X					X		X
4	TP03 - 0.0	Apr 14, 2021		Soil	S21-Ap30459			X					X		X
5	TP03 - 0.5	Apr 14, 2021		Soil	S21-Ap30460			X					X		X
6	TP04 - 0.0	Apr 14, 2021		Soil	S21-Ap30461			X					X		X
7	TP05 - 0.0	Apr 14, 2021		Soil	S21-Ap30462			X					X		X
8	TP05 - 0.5	Apr 14, 2021		Soil	S21-Ap30463			X					X		X
9	TP06 - 0.0	Apr 14, 2021		Soil	S21-Ap30464			X					X		X

Australia

Melbourne

6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney

Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane

1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth

46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle

4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

Auckland

35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch

43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001
Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
10	TP07 - 0.0	Apr 14, 2021		Soil	S21-Ap30465			X					X		X
11	TP07 - 0.3	Apr 14, 2021		Soil	S21-Ap30466								X		X
12	TP08 - 0.0	Apr 14, 2021		Soil	S21-Ap30467			X					X		X
13	TP09 - 0.0	Apr 14, 2021		Soil	S21-Ap30468			X					X		X
14	TP09 - 0.3	Apr 14, 2021		Soil	S21-Ap30469								X		X
15	TP10 - 0.0	Apr 14, 2021		Soil	S21-Ap30470			X					X		X
16	TP10 - 2.0	Apr 14, 2021		Soil	S21-Ap30471	X					X		X		
17	STP01 - 01	Apr 14, 2021		Soil	S21-Ap30472		X						X		X
18	STP01 - 02	Apr 14, 2021		Soil	S21-Ap30473		X						X		X
19	STP01 - 03	Apr 14, 2021		Soil	S21-Ap30474		X						X		X
20	STP01 - 04	Apr 14, 2021		Soil	S21-Ap30475		X						X		X

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
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Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B:TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
21	STP01 - 05	Apr 14, 2021		Soil	S21-Ap30476		X								
22	SS_06_FRAG	Apr 14, 2021		Building Materials	S21-Ap30477				X						
23	RB_140421	Apr 14, 2021		Water	S21-Ap30478										X
24	SS_01	Apr 14, 2021		Soil	S21-Ap30479							X	X		
25	SS_02	Apr 14, 2021		Soil	S21-Ap30480							X	X		
26	SS_03	Apr 14, 2021		Soil	S21-Ap30481							X	X		
27	SS_04	Apr 14, 2021		Soil	S21-Ap30482							X	X		
28	SS_05	Apr 14, 2021		Soil	S21-Ap30483							X	X		
29	SS_06	Apr 14, 2021		Soil	S21-Ap30484							X	X		
30	TB_140421	Apr 14, 2021		Soil	S21-Ap30485								X	X	

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

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16 Mars Road
Lane Cove West NSW 2066
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IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: WSP Australia P/L NSW
Address: Level 27, Ernst & Young Centre
Sydney
NSW 2001

Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 788342
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
31	TP01 - 0.5	Apr 14, 2021		Soil	S21-Ap30486					X					
32	TP01 - 1.4	Apr 14, 2021		Soil	S21-Ap30487					X					
33	TPO2 - 0.3	Apr 14, 2021		Soil	S21-Ap30488					X					
34	TPO2 - 0.5	Apr 14, 2021		Soil	S21-Ap30489					X					
35	TPO2 - 0.1	Apr 14, 2021		Soil	S21-Ap30490					X					
36	TPO3 - 1.0	Apr 14, 2021		Soil	S21-Ap30491					X					
37	TPO4 - 0.3	Apr 14, 2021		Soil	S21-Ap30492					X					
38	TPO4 - 0.5	Apr 14, 2021		Soil	S21-Ap30493					X					
39	TPO4 - 1.0	Apr 14, 2021		Soil	S21-Ap30494					X					
40	TPO5 - 1.0	Apr 14, 2021		Soil	S21-Ap30495					X					
41	TPO5 - 0.3	Apr 14, 2021		Soil	S21-Ap30496					X					

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
42	TPO6 - 0.5	Apr 14, 2021		Soil	S21-Ap30497					X					
43	TPO6 - 1.0	Apr 14, 2021		Soil	S21-Ap30498					X					
44	TPO7 - 0.5	Apr 14, 2021		Soil	S21-Ap30499					X					
45	TPO7 - 1.0	Apr 14, 2021		Soil	S21-Ap30500					X					
46	TPO7 - PAINTFRAG	Apr 14, 2021		Paint	S21-Ap30501					X					
47	TP08 - 0.3	Apr 14, 2021		Soil	S21-Ap30502					X					
48	TP08 - 0.5	Apr 14, 2021		Soil	S21-Ap30503					X					
49	TP08 - 1.0	Apr 14, 2021		Soil	S21-Ap30504					X					
50	TPO9 - 0.5	Apr 14, 2021		Soil	S21-Ap30505					X					
51	TPO9 - 1.0	Apr 14, 2021		Soil	S21-Ap30506					X					

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Address: Level 27, Ernst & Young Centre
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NSW 2001
Project Name: SYDNEY WATER - PITT DOWN
Project ID: PS123998

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Received: Apr 16, 2021 11:58 AM
Due: Apr 23, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence / Presence	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Suite B14: OCP/OPP	Moisture Set	Eurofins Suite B1	Suite B10B: TRH/BTEXN/PAH/OCP/OPP/PCB/M8
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X									
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory - NATA Site # 25079															
External Laboratory															
52	TP10 - 0.5	Apr 14, 2021		Soil	S21-Ap30507					X					
53	QA101	Apr 14, 2021		Soil	S21-Ap30508					X					
54	POTENTIAL LEAD	Apr 14, 2021		Paint	S21-Ap30509					X					
Test Counts						1	5	13	1	24	1	9	30	2	20

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to "non-bonded / friable".
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Laxman Dias Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage Senior Analyst-Asbestos (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sydney Water Pitt Town 788342 - TCLP

Powell, Imogen <Imogen.Powell@wsp.com>

Fri 5/14/2021 11:28 AM

To: Elvis Dsouza <ElvisDsouza@eurofins.com>; #AU04_Enviro_Sample_NSW <EnviroSampleNSW@eurofins.com>

 1 attachments (1 MB)

788342-S_report.pdf;

Hi Elvis

Please can you schedule the below for lead TCLP on 5 day TAT?

STP01-03

STP01-04

Thanks

Imogen

Imogen Powell

Team Manager NSW, Contaminated Land Management



T: +61 2 92721478

M: +61 414 227028

Imogen.Powell@wsp.com

WSP Australia Pty Limited
Level 27, 680 George Street
Sydney, NSW
2000 Australia

wsp.com

14/05/2021

Mail - #AU04_Enviro_Sample_NSW - Outlook

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Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney

Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
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Newcastle

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NATA # 1261 Site # 25079

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IANZ # 1327

Christchurch

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Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name: WSP Australia P/L NSW
Contact name: Imogen Powell
Project name: ADDITIONAL - SYDNEY WATER - PITT DOWN
Project ID: PS123998
Turnaround time: 5 Day
Date/Time received: May 14, 2021 11:27 AM
Eurofins reference: 795186

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 2.9 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elvis Dsouza on phone : or by email: ElvisDsouza@eurofins.com

Results will be delivered electronically via email to Imogen Powell - imogen.powell@wsp.com.

Note: A copy of these results will also be delivered to the general WSP Australia P/L NSW email address.

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Sydney
NSW 2001

Project Name: ADDITIONAL - SYDNEY WATER - PITT DOWN
Project ID: PS123998

Order No.:
Report #: 795186
Phone: 02 9272 5586
Fax: 02 9272 5101

Received: May 14, 2021 11:27 AM
Due: May 21, 2021
Priority: 5 Day
Contact Name: Imogen Powell

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						Lead	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory - NATA Site # 25079							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	STP01 - 03	Apr 14, 2021		US Leachate	S21-My27065	X	X
2	STP01 - 04	Apr 14, 2021		US Leachate	S21-My27066	X	X
Test Counts						2	2

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection and proficiency testing scheme providers
reports.

Attention: **Imogen Powell**

Report **795186-L**
Project name **ADDITIONAL - SYDNEY WATER - PITT DOWN**
Project ID **PS123998**
Received Date **May 14, 2021**

Client Sample ID			STP01 - 03	STP01 - 04
Sample Matrix			US Leachate	US Leachate
Eurofins Sample No.			S21-My27065	S21-My27066
Date Sampled			Apr 14, 2021	Apr 14, 2021
Test/Reference	LOR	Unit		
Heavy Metals				
Lead	0.01	mg/L	0.05	0.05
USA Leaching Procedure				
Leachate Fluid ^{C01}		comment	1.0	1.0
pH (initial)	0.1	pH Units	5.6	6.2
pH (off)	0.1	pH Units	5.1	5.1
pH (USA HCl addition)	0.1	pH Units	1.8	1.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	May 18, 2021	180 Days
USA Leaching Procedure - Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes	Sydney	May 18, 2021	14 Days

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2	STP01 - 04	Apr 14, 2021		US Leachate	S21-My27066	X	X
Test Counts						2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Heavy Metals										
Lead				mg/L	< 0.01			0.01	Pass	
LCS - % Recovery										
Heavy Metals										
Lead				%	82			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Heavy Metals										
Lead	S21-My27065	CP	mg/L	0.05	0.05	5.0		30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised by:

Elvis Dsouza	Analytical Services Manager
John Nguyen	Senior Analyst-Metal (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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SAMPLE RECEIPT ADVICE

SE218763

CLIENT DETAILS

Contact Amy Valentine
Client WSP AUSTRALIA PTY LIMITED
Address GPO Box 5394
SYDNEY NSW 2001

Telephone 02 9272 5100
Facsimile 02 9272 5101
Email amy.valentine@wsp.com

Project **PS123998 Sydney Water-Pitt Town**
Order Number **PS123998**
Samples 1

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

Samples Received Tue 20/4/2021
Report Due Tue 27/4/2021
SGS Reference **SE218763**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Tuesday 20/4/2021. Results are expected to be ready by COB Tuesday 27/4/2021. Please quote SGS reference SE218763 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	Other Lab	Sample cooling method	None
Samples received in correct containers	Yes	Sample counts by matrix	1 Soil
Date documentation received	20/4/2021	Type of documentation received	COC
Number of eskies/boxes received		Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	25°C
Sufficient sample for analysis	Yes	Turnaround time requested	Standard

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

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SAMPLE RECEIPT ADVICE

SE218763

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS123998 Sydney Water-Pitt Town

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	QA101A	29	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .



SAMPLE RECEIPT ADVICE

SE218763

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS123998 Sydney Water-Pitt Town

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content
001	QA101A	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

CLIENT DETAILS

Contact Amy Valentine
 Client WSP AUSTRALIA PTY LIMITED
 Address GPO Box 5394
 SYDNEY NSW 2001

Telephone 02 9272 5100
 Facsimile 02 9272 5101
 Email amy.valentine@wsp.com

Project **PS123998 Sydney Water-Pitt Town**
 Order Number **PS123998**
 Samples 1

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 **SE218763 R0**
 Date Received 20/4/2021
 Date Reported 27/4/2021

COMMENTS

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

SIGNATORIES



Akheeque BENIAMEEN
 Chemist



Bennet LO
 Senior Organic Chemist/Metals Chemist



Dong LIANG
 Metals/Inorganics Team Leader



Huong CRAWFORD
 Production Manager



Ly Kim HA
 Organic Section Head



Teresa NGUYEN
 Organic Chemist

VOC's in Soil [AN433] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
Benzene	mg/kg	0.1	<0.1
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
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: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
PARAMETER	UOM	LOR	SE218763.001
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
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-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
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(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
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
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
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
o,p'-DDE	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
trans-Nonachlor	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
o,p'-DDD	mg/kg	0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1
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
Total CLP OC Pesticides	mg/kg	1	<1

OP Pesticides in Soil [AN420] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
Dichlorvos	mg/kg	0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2
Malathion	mg/kg	0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2
Methidathion	mg/kg	0.5	<0.5
Ethion	mg/kg	0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7

PCBs in Soil [AN420] Tested: 22/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
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

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 26/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
Arsenic, As	mg/kg	1	<1
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	3.2
Copper, Cu	mg/kg	0.5	0.9
Lead, Pb	mg/kg	1	2
Nickel, Ni	mg/kg	0.5	1.6
Zinc, Zn	mg/kg	2	3.2



ANALYTICAL RESULTS

SE218763 R0

Mercury in Soil [AN312] Tested: 26/4/2021

			QA101A
			SOIL
			-
			14/4/2021
PARAMETER	UOM	LOR	SE218763.001
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 23/4/2021

			QA101A
			SOIL
			-
			14/4/2021
			SE218763.001
PARAMETER	UOM	LOR	
% Moisture	%w/w	1	13.9

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 Recoverable Hydrocarbons - Silica (TRH-Si) 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.

FOOTNOTES

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

Unless it is reported that sampling has been performed by SGS, the samples have been 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:

- 1 Bq is equivalent to 27 pCi
- 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 and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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STATEMENT OF QA/QC PERFORMANCE

SE218763 R0

CLIENT DETAILS

Contact Amy Valentine
Client WSP AUSTRALIA PTY LIMITED
Address GPO Box 5394
SYDNEY NSW 2001

Telephone 02 9272 5100
Facsimile 02 9272 5101
Email amy.valentine@wsp.com

Project **PS123998 Sydney Water-Pitt Town**
Order Number **PS123998**
Samples 1

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 **SE218763 R0**
Date Received 20 Apr 2021
Date Reported 27 Apr 2021

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.

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	1 item
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	VOC's in Soil	1 item

SAMPLE SUMMARY

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

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223301	14 Apr 2021	20 Apr 2021	12 May 2021	26 Apr 2021	12 May 2021	27 Apr 2021

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223206	14 Apr 2021	20 Apr 2021	28 Apr 2021	23 Apr 2021	28 Apr 2021	26 Apr 2021

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223178	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	27 Apr 2021

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223178	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	27 Apr 2021

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
QA101A	SE218763.001	LB223178	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	27 Apr 2021

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223178	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	27 Apr 2021

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
QA101A	SE218763.001	LB223300	14 Apr 2021	20 Apr 2021	11 Oct 2021	26 Apr 2021	11 Oct 2021	27 Apr 2021

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
QA101A	SE218763.001	LB223178	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	27 Apr 2021

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223181	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	26 Apr 2021

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QA101A	SE218763.001	LB223181	14 Apr 2021	20 Apr 2021	28 Apr 2021	22 Apr 2021	01 Jun 2021	26 Apr 2021

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 identifier 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)	QA101A	SE218763.001	%	60 - 130%	89

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QA101A	SE218763.001	%	60 - 130%	81
d14-p-terphenyl (Surrogate)	QA101A	SE218763.001	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QA101A	SE218763.001	%	70 - 130%	81
d14-p-terphenyl (Surrogate)	QA101A	SE218763.001	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	QA101A	SE218763.001	%	70 - 130%	82

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QA101A	SE218763.001	%	60 - 130%	89

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QA101A	SE218763.001	%	60 - 130%	64
d4-1,2-dichloroethane (Surrogate)	QA101A	SE218763.001	%	60 - 130%	86
d8-toluene (Surrogate)	QA101A	SE218763.001	%	60 - 130%	83

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QA101A	SE218763.001	%	60 - 130%	64
d4-1,2-dichloroethane (Surrogate)	QA101A	SE218763.001	%	60 - 130%	86
d8-toluene (Surrogate)	QA101A	SE218763.001	%	60 - 130%	83

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)-ENVJAN312

Sample Number	Parameter	Units	LOR	Result
LB223301.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB223178.001	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
Surrogates	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	87

OP Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB223178.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Surrogates	2-fluorobiphenyl (Surrogate)	%	-	92
	d14-p-terphenyl (Surrogate)	%	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB223178.001	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

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]JAN420

Sample Number	Parameter	Units	LOR	Result
LB223178.001	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)	%	-	84
	2-fluorobiphenyl (Surrogate)	%	-	92
	d14-p-terphenyl (Surrogate)	%	-	88

PCBs in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result
LB223178.001	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)	%	-	87

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

Method: ME-(AU)-[ENV]JAN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB223300.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	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]JAN403

Sample Number	Parameter	Units	LOR	Result
LB223178.001	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]JAN433

Sample Number		Parameter	Units	LOR	Result
LB223181.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		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	d4-1,2-dichloroethane (Surrogate)	%	-	95
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	73
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]JAN433

Sample Number	Parameter	Units	LOR	Result
LB223181.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218717A.002	LB223301.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE218717A.020	LB223301.024	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 %
SE218741.006	LB223206.011	% Moisture	%w/w	1	13.2	13.0	38	1
SE218831.004	LB223206.022	% Moisture	%w/w	1	13.6	13.4	37	2

OC Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218760.001	LB223178.029	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)		mg/kg	-	0.14	0.14	30	3

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218760.001	LB223178.027	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methodathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	1
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	8
		Surrogates						
SE218827.002	LB223178.028	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OP Pesticides in Soil (continued)

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218827.002	LB223178.028	Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methodathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	4
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	9

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218760.001	LB223178.027	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	0.1	0.3	81	62
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	0.3	0.4	59	29
		Pyrene	mg/kg	0.1	0.3	0.5	55	33
		Benzo(a)anthracene	mg/kg	0.1	0.1	0.2	96	41
		Chrysene	mg/kg	0.1	0.1	0.2	98	31
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	140	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	193	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	0.1	125	13
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	196	0
		Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	128	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	132	0
		Total PAH (18)	mg/kg	0.8	1.0	1.6	92	44
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	1
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	8
SE218827.002	LB223178.028	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
		Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218827.002	LB223178.028	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	18
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	9

PCBs in Soil

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218760.001	LB223178.029	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	3

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

Method: ME-(AU)-[ENV]JAN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218717A.002	LB223300.014	Arsenic, As	mg/kg	1	5	4	53	22
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	6.8	5.0	39	31
		Copper, Cu	mg/kg	0.5	19	14	33	28
		Nickel, Ni	mg/kg	0.5	6.8	5.4	38	23
		Lead, Pb	mg/kg	1	16	14	37	15
		Zinc, Zn	mg/kg	2	29	24	38	20
SE218717A.020	LB223300.024	Arsenic, As	mg/kg	1	8	6	44	21
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	7.1	7.4	37	4
		Copper, Cu	mg/kg	0.5	12	17	33	31
		Nickel, Ni	mg/kg	0.5	7.8	9.3	36	17
		Lead, Pb	mg/kg	1	29	15	35	64 @
		Zinc, Zn	mg/kg	2	29	36	36	24

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]JAN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218760.001	LB223178.027	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH >C10-C16	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE218827.002	LB223178.028	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH >C10-C16	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]JAN433

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

VOC's in Soil (continued)

Method: ME-(AU)-ENVJAN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE218741.007	LB223181.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200
			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	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.8	8.2	50	7
			d8-toluene (Surrogate)	mg/kg	-	8.7	7.9	50	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.8	6.1	50	10
		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
		SE218831.004	LB223181.024	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1
Aromatic	Toluene				mg/kg	0.1	<0.1	<0.1	200
	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	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	9.5	9.7	50	2
	d8-toluene (Surrogate)			mg/kg	-	8.9	9.7	50	9
	Bromofluorobenzene (Surrogate)			mg/kg	-	9.7	8.9	50	8
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

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-ENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE218741.007	LB223181.014	TRH C6-C10	mg/kg	25	<25	<25	200	0	
		TRH C6-C9	mg/kg	20	<20	<20	200	0	
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.8	8.2	30	7
			d8-toluene (Surrogate)	mg/kg	-	8.7	7.9	30	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.8	6.1	30	10
			VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200
		TRH C6-C10 minus BTEX (F1)		mg/kg	25	<25	<25	200	0
		SE218831.004	LB223181.024	TRH C6-C10	mg/kg	25	<25	<25	200
TRH C6-C9	mg/kg			20	<20	<20	200	0	
Surrogates	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	9.5	9.7	30	2
	d8-toluene (Surrogate)			mg/kg	-	8.9	9.7	30	9
	Bromofluorobenzene (Surrogate)			mg/kg	-	9.7	8.9	30	8
	VPH F Bands			Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200
TRH C6-C10 minus BTEX (F1)				mg/kg	25	<25	<25	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 %
LB223301.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100

OC Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB223178.002	Heptachlor	mg/kg	0.1	0.1	0.2	60 - 140	73
	Aldrin	mg/kg	0.1	0.1	0.2	60 - 140	72
	Delta BHC	mg/kg	0.1	0.1	0.2	60 - 140	65
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	73
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	83
	p,p'-DDT	mg/kg	0.1	0.1	0.2	60 - 140	60
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/ka	-	0.13	0.15	40 - 130

OP Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB223178.002	Dichlorvos	mg/kg	0.5	1.7	2	60 - 140	84
	Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	105
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	2	60 - 140	99
	Ethion	mg/kg	0.2	1.5	2	60 - 140	77
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB223178.002	Naphthalene	mg/kg	0.1	4.0	4	60 - 140	99
	Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	95
	Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	102
	Phenanthrene	mg/kg	0.1	4.1	4	60 - 140	101
	Anthracene	mg/kg	0.1	3.9	4	60 - 140	98
	Fluoranthene	mg/kg	0.1	4.4	4	60 - 140	111
	Pyrene	mg/kg	0.1	4.1	4	60 - 140	103
	Benzo(a)pyrene	mg/kg	0.1	3.8	4	60 - 140	96
Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	87
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	83
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB223178.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	109

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 %
LB223300.002	Arsenic, As	mg/kg	1	340	318.22	80 - 120	108
	Cadmium, Cd	mg/kg	0.3	4.8	4.81	70 - 130	99
	Chromium, Cr	mg/kg	0.5	40	38.31	80 - 120	105
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	106
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	101
	Lead, Pb	mg/kg	1	94	89.9	80 - 120	104
	Zinc, Zn	mg/kg	2	280	273	80 - 120	103

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB223178.002	TRH C10-C14	mg/kg	20	42	40	60 - 140	105	
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	98	
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	85	
	TRH F Bands	TRH >C10-C16	mg/kg	25	39	40	60 - 140	98
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	103
		TRH >C34-C40 (F4)	mg/ka	120	<120	20	60 - 140	75

VOC's in Soil

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

Sample Number	Parameter	Units	LOR
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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 %
LB223181.002	Monocyclic	Benzene	mg/kg	0.1	3.8	5	60 - 140
	Aromatic	Toluene	mg/kg	0.1	4.1	5	60 - 140
		Ethylbenzene	mg/kg	0.1	4.5	5	60 - 140
		m/p-xylene	mg/kg	0.2	9.8	10	60 - 140
		o-xylene	mg/kg	0.1	4.7	5	60 - 140
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.9	10	70 - 130
		d8-toluene (Surrogate)	mg/kg	-	9.5	10	70 - 130
		Bromofluorobenzene (Surrogate)	mg/kg	-	7.3	10	70 - 130

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB223181.002		TRH C6-C10	mg/kg	25	70	92.5	60 - 140
		TRH C6-C9	mg/kg	20	56	80	60 - 140
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.9	10	70 - 130
		Bromofluorobenzene (Surrogate)	mg/kg	-	7.3	10	70 - 130
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	43	62.5	60 - 140

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 identifier 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%
SE218762.001	LB223301.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	90

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	84
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	83
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	86
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	85
		Endrin	mg/kg	0.2	<0.2	<0.2	0.2	94
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.1	<0.1	0.2	65
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.14	-	91

OP Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	Dichlorvos	mg/kg	0.5	1.9	<0.5	2	93
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	99
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	<0.2	2	101
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	1.9	<0.2	2	94
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		Total OP Pesticides*	mg/kg	1.7	7.8	<1.7	-	-
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	89
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	89

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	Naphthalene	mg/kg	0.1	4.0	<0.1	4	100
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.1	<0.1	4	103
		Acenaphthene	mg/kg	0.1	4.2	<0.1	4	104
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.2	<0.1	4	104

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 identifier 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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	Anthracene	mg/kg	0.1	4.1	<0.1	4	103
		Fluoranthene	mg/kg	0.1	4.5	<0.1	4	112
		Pyrene	mg/kg	0.1	4.4	<0.1	4	110
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	3.8	<0.1	4	96
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	3.8	<0.2	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	4.0	<0.3	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	3.9	<0.2	-	-
		Total PAH (18)	mg/kg	0.8	33	<0.8	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	88
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	89
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	89

PCBs in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	125
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	91

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218762.001	LB223300.004	Arsenic, As	mg/kg	1	41	5	50	71
		Cadmium, Cd	mg/kg	0.3	42	<0.3	50	84
		Chromium, Cr	mg/kg	0.5	57	14	50	86
		Copper, Cu	mg/kg	0.5	64	22	50	83
		Nickel, Ni	mg/kg	0.5	49	6.8	50	85
		Lead, Pb	mg/kg	1	53	14	50	78
		Zinc, Zn	mg/kg	2	98	65	50	65 @

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223178.004	TRH C10-C14	mg/kg	20	67	<20	40	133
		TRH C15-C28	mg/kg	45	120	77	40	115
		TRH C29-C36	mg/kg	45	130	97	40	78
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	320	170	-	-
		TRH >C10-C40 Total (F bands)	mg/kg	210	240	<210	-	-
	TRH F Bands	TRH >C10-C16	mg/kg	25	67	37	40	75
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	63	37	-	-
		TRH >C16-C34 (F3)	mg/kg	90	170	130	40	95
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223181.004	Monocyclic	Benzene	mg/kg	0.1	3.8	<0.1	5	75
		Aromatic	Toluene	mg/kg	0.1	3.7	<0.1	5	74
			Ethylbenzene	mg/kg	0.1	4.3	<0.1	5	85
			m/p-xylene	mg/kg	0.2	8.4	<0.2	10	84
			o-xylene	mg/kg	0.1	4.2	<0.1	5	84

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 identifier 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%
SE218734.001	LB223181.004	Polycyclic	Naphthalene	mg/kg	0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	9.8	10
			d8-toluene (Surrogate)	mg/kg	-	9.3	9.5	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.6	7.1	10
		Totals	Total Xylenes	mg/kg	0.3	13	<0.3	-
			Total BTEX	mg/kg	0.6	24	<0.6	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE218734.001	LB223181.004	TRH C6-C10	TRH C6-C10	mg/kg	25	69	<25	92.5
			TRH C6-C9	mg/kg	20	60	<20	80
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	9.8	10
			d8-toluene (Surrogate)	mg/kg	-	9.3	9.5	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	6.6	7.1	-
		VPH F	Benzene (F0)	mg/kg	0.1	3.8	<0.1	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	45	<25	62.5

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the

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 : https://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.
- *** Indicates that both * and ** apply.
- 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 relevant report comments for further information.

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