GRINDLEY CONSTRUCTION PTY LTD

VALIDATION REPORT

WESTERN STAGE 1, WENTWORTHVILLE PUBLIC SCHOOL

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DECEMBER 2020

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Validation Report
Western Stage 1, Wentworthville Public School

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REV	DATE	DETAILS
01	16/10/2020	Draft for auditor comment
02	04/12/2020	Updated draft incorporating auditor comments

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ABBREVIATIONS

ABC	Ambient background level
ACM	Asbestos Containing Material
ACL	Added contamination limit
BTEXN	Benzene, toluene, ethylbenzene, xylene and naphthalene
CEC	Cation Exchange Capacity
COLA	Converted outdoor learning area
DA	Development Application
DGI	Data Gap Investigation
DQI	Data Quality Indicator
DQO	Data Quality Objective
ENM	Excavated Natural Material
EPA	Environmental Protection Authority
LAA	Licenced asbestos accessor
LOR	Limit of reporting
mBGL	Metres below ground level
NATA	National Association of Testing Authorities
NEPM	National Environmental Protection Measures
OC	Occupation Certificate
OCP	Organophosphorus pesticide
OPP	Organochlorine pesticide
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
PQL	practical quantitation limit
QA/QC	Quality Assurance / Quality Control
TRH	Total recoverable hydrocarbon
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Carbon
RAP	Remedial Action Plan
RPD	Relative percentage difference
SOP	Standard Operating Procedure

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EXECUTIVE SUMMARY

WSP Australia Pty Ltd (WSP) was commissioned by Grindley Construction Pty Ltd (Grindley Construction) to provide a validation report for the Western Stage 1 Area (the site) which includes part of Block H and Ramp 9 at Wentworthville Public School, 70-100 Fullagar Road, Wentworthville New South Wales.

The purpose of this validation report is to assess the compliance of remedial and development works at the site with the requirements of the RAP prior to occupancy of the site by site users.

Based on the implementation of the RAP, involving excavation and disposal works for the site between 14 April and 23 September 2020, WSP makes the following conclusions

- No ACM was identified on the natural clay surface or within any remaining fill material around tree protection zones. As such all ACM % w/w concentrations were below adopted HSLs. As the validation works did not identify ACM above the adopted criteria, there is no evidence of an ongoing ACM risk to site users.
- No AF/FA was identified within any validation sample of the natural clay or remaining fill material around tree protection zones. As such all AF/FA % w/w concentrations were below adopted health screening levels. As the validation works did not identify AF/FA above the adopted criteria, there is no evidence of an ongoing AF/FA risk to site users.
- All validation sampling locations selected for chemical analysis (TRH, BTEXN, PAH and eight heavy metals, with selected samples analysed for DDT) were below laboratory LORs and/or below adopted health and ecological criteria. As the validation works did not identify chemical concentrations above the adopted criteria, there is no evidence of an ongoing chemical risk to site users.
- Chemical and asbestos sampling results of STP1 and ST2 material assessed for reuse were compliant with the site re-use criteria provided in the WSP, 2020 RAP.
- With regards to the exposed walls within contaminated fill, a geotextile marker layer to the edge of the development/excavated area has been placed. Based on WSP's inspection of the geotextile once installed, and review of supporting photographs, WSP considers the geotextile marker layer has been installed in accordance with the RAP and adequately protects site users from exposed fill walls (where evident).
- With regards to waste disposal, the recorded disposal tonnes equate to approximately 643.65 m^3 (ex-situ volume). WSP consider the sampling and analytical results of are representative of the disposed materials, and have been disposed at a facility licenced to accept that material.
- With regards to imported material, WSP was present to inspect imported material upon arrival the site and reconciled importation dockets with the source sites. Supporting documentation has been provided to WSP of the quarried product which in conjunction with WSP's confirmatory sampling shows all imported material satisfies the requirements of the WSP, 2020 RAP. WSP considers imported material does not present a risk to site users.

WSP considers the remediation and validation works undertaken within at the site at were conducted in accordance with the RAP and relevant guidelines and legislation. Based on the site observations and available laboratory analysis, validation results are compliant with adopted health and ecological criteria with no evidence of ongoing risk to site users for the proposed land-use as a primary school.

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1 INTRODUCTION

WSP Australia Pty Ltd (WSP) was commissioned by Grindley Construction Pty Ltd (Grindley) to provide a validation report for a portion of Grindley's development area at Wentworthville Public School, 70-100 Fullagar Road, Wentworthville, New South Wales (NSW). Refer to Appendix A – Figure 1 for location of the school.

Grindley has been engaged by the NSW Department of Education as Principal Contractor for the demolition and upgrade of a portion of the school. The upgrade will provide 31 new permanent teaching spaces by replacing demountables with permanent facilities and will be undertaken in three different development stages.

Development consent requirements state that a site audit statement (SAS) and site audit report (SAR) be provided which comment on the suitability of the site for the proposed land use. As part of the audit process, Grindley has appointed a NSW EPA accredited site auditor (Rebekah Hall of Zoic Environmental Pty Ltd, 'the site auditor') to audit the remediation and validation process.

The auditable areas have been divided into three stages (Stage 1 – 3) to match the staged development, with Stage 1 split into separate areas on the eastern and western sides of the school. The 'site' and validation extent of this report comprises part of the western Stage 1 audit area. Refer to Appendix A – Figure 2 for audit stages overlayed with remediation extent, and extent to which this validation report relates. Remediation works within the site commenced in April 2020.

The purpose of this validation report is to assess the compliance of remediation and validation works at the site with the requirements of the WSP (March, 2020) *Remediation Action Plan for Proposed Development at Wentworthville Public School,* 70-100 Fullagar Road, Wentworthville New South Wales (RAP), to allow the preparation of an SAS and SAR and enable the new development to be occupied by site users.

1.1 OBJECTIVE

The objectives of this validation report are to document that:

- remedial works carried out at the site were undertaken in accordance with the WSP, 2020 RAP. In particular the remediation of identified contaminated soil within the site; and
- the site is suitable for the future use of the site as a kindergarten and primary school.

1.2 SCOPE OF WORKS

The scope of works involved in this validation report comprised:

- Review of relevant previous reports provided by Grindley Construction and undertaken by WSP and comment on the reliability of the data and findings
- Review of supporting information including material characterisation and tracking for disposed and imported materials, and adherence of the remedial activities to the RAP
- Review of validation sampling and analysis data against adopted health and ecological guidelines
- Preparation of this validation report, providing commentary if remediation works have been completed as prescribed by the RAP and provide an opinion of risk to intended users to enable re-occupation of the site.

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2 SITE INFORMATION

2.1 SITE LOCATION AND IDENTIFICATION

Site details are provided in Table 2-1

Table 2.1 Site identification details

ITEM	DESCRIPTION
Site address	The address of Wentworthville Public School which contains the site is 70-100 Fullagar road, Wentworthville NSW.
Site definition	The site and validation extend comprises soils underlying the newly constructed 'Hall H, Canteen, OOSH and Ramp 9' areas, as well as outdoor common areas within the western Stage 1 audit area as defined in Appendix A – Figure 4. The site and validation extent exclude the eastern portion of the COLA, as illustrated in Figure 4, given the area is yet to be remediated and may be subject to further re-design.
Legal Identification	The site comprises part Lot 1 in Deposited Plan 1245593
Local government	Cumberland Council (formerly Holroyd Council)
Zoning	R2 – low density residential land use under the Cumberland Council Local Environment Plan (LEP) zoning maps (April 2020).
Area (m2)	Validation area – approximately 1,837 m^2
Current Site use	Kindergarten and primary school
Future site use	Continued use as a kindergarten and primary school
Surrounding land uses	Other surrounding land uses include the following: — To the north – Fullagar Road, residential properties and Wentworthville train station beyond — To the east – Station Street, residential properties and Parramatta beyond — To the south – Monash Street, the Western Motorway and residential properties beyond — To the west – Garfield Street, Cumberland Highway with Ringrose Park and residential properties beyond.
Topography	The site is situated at approximately 40 meters Australian Height Datum (mAHD). Topography at the school generally slopes from the south-west to north-east. Surface water runoff from the site is anticipated to flow towards the east / north-east. The nearest surface water body is Finlaysons Creek located approximately 180 m east of the site. No preferential water courses have been identified within a 180 m radius of the site.
Geology	The Department of Minerals and Energy, 1991, 1:100,000 Penrith Geological Map Sheet 9030 indicates that the regional geology in the vicinity of the site is identified as Bringelly Shale described as shale, carbonaceous claystone, laminite of the Wianamatta Group.

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	There are no geological units containing asbestos within a 2000m buffer of the site that are mapped on the publicly accessible web mapping site https://www.arcgis.com/apps/PublicInformation/index.html The site is underlain by residual soils (REbt) of the Blacktown Group. Soils from the Blacktown group are derived from the Wianamatta Group Shales and Hawkesbury Shale. Soils comprise shallow to moderately deep red and brown podzolic soils on crests, upper slopes and well drained areas with deep yellow podzolic soils and soloths on lower slopes and in areas of poor drainage. For further details, refer to the WSP, 2020 RAP.
Site History	Historical records indicate that the site currently identified onsite are registered under the minister of education (previously identified as Her Most Gracious Majesty Queen Victoria) from 1880 to date, indicating that the land has been used as a school campus since then. Aerial imagery shows that the site comprised of a small building in 1943, towards the North West corner of the site. The site remained largely unchanged from the 1940s to the 1980s. However, during the 1990s the small building within Block H was deconstructed and the area was vacant with vegetation onsite. Since the 1990s the site has remained largely unchanged to its current configuration, with the addition of a COLA and an OSD tank in the mid-2000s and 2010 respectively. The surrounding area towards south east of site gradually developed between 1943 to its current configuration as a school campus. For more detail on site history, reference can be made to previous WSP report *"Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI)" (2018)* and *"Remediation Action Plan (RAP)" (2020)*.
Current Site Condition	The site has been remediated and construction works for the new hall, canteen, OOSH and COLA are well progressed.

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3 LEGISLATIVE GUIDANCE

The legislative framework for the validation report is based on guidelines that have been issued and/or endorsed by the NSW Environment Protection Authority (EPA) under the following acts and/or policies:

- Section 105 of the Contaminated Land Management Act 1997 (CLM Act; NSW).
- State Environmental Planning Policy No 55 - Remediation of Land (SEPP 55).
- Protection of the Environment Operations Act 1997 (POEO Act; NSW).
- Waste Avoidance and Resource Recovery Act 2001 (WARR Act); NSW.
- Work Health and Safety Act 2011 (NSW).

The validation report was prepared in accordance with the following:

- Department of Health Western Australia 2009 *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia*.
- Department of Urban Affairs and Planning 1998, *Managing Land Contamination Planning Guidelines: State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land*.
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM, as amended 2013).
- National Occupational Health and Safety Commission 1995, *Exposure Standards for Atmospheric Contaminants in the Occupational Environment*.
- NSW EPA 1995, *Contaminated Sites: Sampling Design Guidelines*.
- NSW EPA 2017 *Guidelines for the NSW Site Auditor Scheme* (3rd Edition).
- NSW EPA 2020, *Guidelines for Consultants Reporting on Contaminated Sites*.
- WA DER, 2009; *Guidelines for the Assessment, Remediation and Management of Asbestos - Contaminated Sites.*
- NSW EPA 2014, *Waste Classification Guidelines – Part 1: Classifying Waste*.

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4 PREVIOUS INVESTIGATIONS

The site has been subject to a number of historical geotechnical and environmental investigations since 2017. A summary of the most relevant investigations pertaining to the site are provided below.

4.1 WSP 2018 PSI/DSI

The PSI/DSI investigation (WSP, 2018) was undertaken across a portion of the school and prior to the current development and audit stages. Two locations, BH01 and BH02 were advanced within this validation extent. All concentrations of total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs) and arsenic, cadmium, chromium, lead, mercury, nickel and zinc (heavy metals) from BH01 and BH02 were below adopted health and environmental criteria. A fragment of asbestos was also identified at surface along the northern boundary of the investigation area which exceeds NEPM HSL-A. Refer to WSP, 2020 RAP for a complete summary of the WSP 2018 PSI/DSI.

4.2 EIS PRELIMINARY ENVIRONMENTAL SCREENING

Environmental Investigation Services Pty Ltd (EIS) undertook a limited combined geotechnical and environmental investigation across the school to identify potential contamination ref: *Preliminary Environmental Screening – Proposed School Additions – Wentworthville Public School NSW* (EIS, 2017).

Fill material was encountered in all boreholes around the school. However, only one borehole (BH03) was advanced within the site/validation extent, located near the southern boundary. Within BH03, no exceedances of the EIS adopted site criteria were recorded for TRH, BTEXN, PAHs, organochlorine and organophosphorus pesticides (OCP/OPP), polychlorinated biphenyls (PCBs) and heavy metals, and no asbestos was detected at a reporting limit of 0.1g/kg.

Two fibre cement fragments (F1 and F2) were observed at surface near the ‘ramp 9’ area of the site, which exceeds NEPM HSL-A.

4.3 JK ENVIRONMENTS SALINITY ASSESSMENT

Following the EIS, 2017 investigation, JK Environments Pty Ltd (JKE, formerly EIS) selected five boreholes for assessment of salinity in fill and natural material up to a depth of 1.95 m ref *Preliminary Salinity Assessment for Proposed School Development at Wentworthville Public School 70-100 Fullagar Street, Wentworthville NSW* (JKE, 2019). Only one borehole (BH101) was advanced within the site /validation extent. Chemical analysis was limited, however the following soil physical parameters were obtained:

- The shale bedrock sample obtained from BH101 at a depth of 1.5mBGL was classed as slightly saline
- Soil pH Values were noted to range between 5 and 7 for some deeper natural soils
- Cation exchange capacity (CEC) was 13 cmol/kg.

4.4 P.CLIFTON WASTE CLASSIFICATION

P.Clifton and Associates Pty Ltd (PCA) conducted a waste classification assessment at the site in January 2020 ref: Waste Classification of I-Situ Fill Soils Containing Asbestos Cement Sheet Debris at the Wentworthville Public School 70-100 Fullagar Street, Wentworthville NSW” (PCA, 2020) as part of the development early works at the school.

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The investigation was undertaken in the northeast and northwest portions of the school within known asbestos contaminated soils. From the six samples collected, all chemical results were compliant with NSW EPA general solid waste CT1 criteria, with exception of lead in sample 6 (within the site/validation extent) which subsequently passed SCC1 criteria with additional toxicity characteristics leaching procedure (TCLP)_analysis.

Due to the presence of asbestos, the material was classified as Special Waste – Asbestos.

4.5 4PILLARS WASTE CLASSIFICATION

4Pillar Pty Ltd (4Pillars) conducted a waste classification assessment at the site in January 2020 ref: Waste Analysis and classification report Wentworthville Public School 70-100 Fullagar Street, Wentworthville NSW" (PCA, 2020) as part of the development early works at the school.

The investigation was undertaken in the eastern and northwest portions of the school. From the 10 samples collected, one was within the site/validation extent (S10). The chemical results for S10 were compliant with NSW EPA general solid waste CT1 criteria. One asbestos fragment was identified (As3) during the investigation, it was located towards north west of the site.

Due to the presence of asbestos, the material was classified as Special Waste – Asbestos.

4.6 WSP, MARCH 2020: REMEDIATION ACTION PLAN

The objective of the RAP is to mitigate asbestos and other potential contamination on site to ensure it did not pose a threat and render the site suitable for the proposed development within the primary school. ACM in soil were identified as contaminants on site, requiring remediation and management during both redevelopment and ongoing use as a primary school.

The RAP outlined various validation requirements depending on the selected remediation approach. During Stage 1, three remediation approaches were identified including capping, excavation and offsite disposal, as well as hand picking. It was determined that excavation and offsite disposal would be the most appropriate approach to adopt for the site. Validation acceptance criteria and procedures were established for different cap and containment scenarios, as well as re-use and suitability assessment of on-site soils (for both fill and natural soil profiles). Validation protocols for the importation and disposal of soils were also detailed.

The RAP was reviewed and approved by the site auditor and was to be implemented by Grindley for the duration of the remediation works. The RAP has had several revisions since original submission in March, in particular to include the findings of additional investigations within the Stage 1 audit area, as discussed in Section 4.7.

4.7 WSP, JULY 2020: BLOCK G AND H INVESTIGATION

Since Grindley's occupation of the site, further instances of asbestos were identified in fill soils throughout the development areas. In April 2020, WSP conducted further investigation of Block H and G within the Stage 1 development area to further assess the extent of chemical and asbestos impacts and issued an *"Environmental Site Assessment (Block G and H), Wentworthville Public School 70-100 Fullagar Road, Wentworthville, NSW"*. A summary of the WSP, July 2020 investigation undertaken within the site/validation extent is as follows:

- 12 test pits were advanced. ACM was identified in four test pits (TP1, TP3, TP5 and TP7) within the fill horizon. ACM %w/w concentrations exceeded HSL-A (including primary schools) criteria in TP3, TP5 and TP7.
- No forms of friable asbestos were detected.
- Exceedances of HSL-A for asbestos were identified in both shallow (<0.1 m) and deeper (>0.1 m) fill. With exception of areas covered by DGB or asphalt hardstand, no clear delineation of fill layers was observed.

- During the investigation, numerous fragments (approximately 10 – 15) were observed on the site surface sporadically throughout the investigation area. These additional fragments were not captured in test pit locations.
- A selection of samples were analysed for TRH, BTEXN, PAHs and eight metals. All BTEXN results were below laboratory limits of reporting (LOR). Minor TRH detections were observed in TP4, TP9 and TP11 and PAH detections were recorded in TP4.
- In TP2_0.2 (fill), a concentration of lead exceeded the adopted HIL-A criteria, and the concentration of zinc was equal to the adopted EIL for public open space. All other chemical concentrations were compliant with adopted health and ecological criteria.

Based on the analysis results, given the extent of asbestos identified, all fill material was considered unsuitable in its current state.

4.8 WSP 2020: WASTE CLASSIFICTAIONS

In accordance with the RAP, WSP prepared three waste classifications for the site/validation extent. The waste classification reports are presented in Appendix B. The waste classifications completed for the site are summarised in Table 4.1 below:

Table 4.1 Summary of waste classifications

REPORT REF	LOCATION	WASTE CLASSIFICATION
WSP, 2020 WC1	The site (excluding ramp 9)	Ten representative samples of the asbestos contaminated fill material analysed during the WSP, April 2020 investigation were used to prepare a waste classification for accessible fill soils within the site/validation extent. At the time, Grindley and WSP did not have full access to the 'ramp 9' area, which was not included in the classification. Concentrations of lead exceeded the Table 1, contaminant threshold CT1 criteria for general solid waste in samples TP1_0.1, TP2_0.2, TP3_0.2, TP4_0.2, TP12_0.1 and duplicate sample QA01. Concentration of all other analytes were either below the laboratory reporting limit or below the contaminant threshold CT1 criteria for general solid waste. Following toxicity characteristic leaching procedure (TCLP) tests, all samples were below the Table 2, general solid waste assessment criteria (TCLP1 and SCC1). Although soil samples did not detect AF/FA. Four fragments submitted during the WSP, April 2020 investigation were confirmed to be asbestos containing and representative of the asbestos contamination in the fill profile. WSP issued a waste classification report (ref: "*PS119057-CLM-LTR-001 RevA Block H*" (WSP, 2020 WC1), and a classification of "Special Waste – Asbestos waste within a soil matrix chemically consistent with general solid waste – non-putrescible" was provided.
WSP, 2020 WC2	OSD tank	During the excavation of the previous water detention system (OSD), engineering sand around the OSD tank walls was excavated and stockpiled. A total of six samples were collected from 2 different stockpiles (STP01 and STP02) to asses for waste classification and potential re-use. No ACM or olfactory evidence of contamination was observed, and chemical analysis concentrations were below CT1 criteria. WSP issued a waste classification report (ref: "*PS119057-Wentworthville Public School_STP01 & STP02_CLM-LTR-001*" (WSP, 2020 WC2), and a classification of

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		"General solid waste – non-putrescible" was provided. However, this material was shown to be compliant with adopted site criteria and was reused within the site. Results discussion for reuse of STP01 and STP02 are including in Section 9.1.
WSP 2020, WC3	Ramp 9	Given Ramp area 9 was inaccessible during the initial waste classification, WSP prepared a separate waste classification only for Ramp 9 stockpile in June 2020. Concentration of all analytes were either below the laboratory reporting limit or below the contaminant threshold CT1 criteria for general solid waste. Although concentration off all analytes were below the CT1 criteria, TCLP was conducted on selected PAHs and metals pre-emptively to facilitate an expedited waste classification report given time constraints. Following toxicity characteristic leaching procedure (TCLP) tests, all samples were below the Table 2, general solid waste assessment criteria (TCLP1 and SCC1). Numerous asbestos fragments were identified and confirmed to be asbestos containing and representative of the asbestos contamination in the stockpile. WSP issued a waste classification report (ref: "*PS119057-Wentworthville Public School_STP06_CLM-LTR-001*" (WSP, 2020 WC3), and a classification of "Special Waste – Asbestos waste within a soil matrix chemically consistent with general solid waste – non-putrescible" was provided. This material was not disposed off-site, it was transferred to the Block G burial pit (100 m from the Ramp 9 Gate and within eastern Stage 1 area) via a dump truck through Fullagar Road.
WSP 2020, WC4	Southern stairs and north of COLA	During detailed excavation works along the southern edge of the site and also immediately north of the COLA, WSP conducted seven test pits (TP01 – TP07) to assess the reworked natural and natural clay material for waste classification and potential re-use. No ACM or olfactory evidence of contamination was observed, and chemical analysis concentrations were below CT1 criteria. WSP issued a waste classification report (ref: "*PS119057-CLM-LTR-001 RevA South of Block H*" (WSP, 2020 WC4), and a classification of "General solid waste – non-putrescible" was provided. However, this material was shown to be compliant with adopted site criteria and was transferred for reuse within Block G (eastern Stage 1 area). Results discussion for reuse of STP01 and STP02 are including in Section 9.1.

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5 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation or overall picture of the site that shows the possible relationships between a contaminant source, exposure pathways and receptors. This is known as the source-pathway-receptor (SPR) analysis. For a potential risk to be present, all three of the following components must exist:

- a potential source of contamination
- a receptor that could be adversely affected by the contaminants (such as people, or an ecosystem)
- a pathway that allows the receptor to be exposed to or affected by the contaminant (e.g. direct contact with asbestos impacted soil or contaminated vapour inhalation).

The CSM for the site is explained below.

Table 5.1 Source Pathway Receptor Analysis

SOURCE	PATHWAY	RECEPTOR	SPR LINKAGE	RISK ASSESSMENT
Asbestos impacted imported fill material	Direct contact and inhalation	Site workers, future site users, students and staff	Complete	**Unlikely:** Asbestos impacted fill material on site has been excavated and disposed offsite. Only residual clay remains on site, which has been validated to be free of asbestos.
	On-site ecosystems			**Unlikely:** Given the proposed future site condition (i.e. slab-on-grade school building with limited soil access), flora and/or fauna access to site soils is considered unlikely. Samples have been collected from the existing trees and did not report COPCs at concentrations above applicable ecological criteria.
Hydrocarbon impacted fill material	Vapour intrusion			**Unlikely:** No concentrations of TRH, BTEX and PAH were recorded above their respective health criteria within the soil samples collected from natural exposed clay.
Impacted soils associated with metals	Direct contact and/or ingestion			**Unlikely:** No concentrations of metals were recorded above their respective health criteria within the soil samples collected from natural exposed clay.

Based on the CSM, the following summarises the key findings:

- Asbestos impacted fill material is unlikely to be present on site because it was excavated and disposed offsite. All that remains is residual clay which has been validated. Walls that were exposed have been covered with geofabric textile layer, minimising exposure to impacted soils. The site is now predominantly paved with newly erected structures on site.
- Based on the analytical results there is a no soils impacted with TRH, BTEX, PAH and metals on site. Therefore, the absence of impacted soils is not a risk to receptors.

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6 IMPLEMENTATION OF THE RAP

6.1 A SUMMARY OF THE REMEDIATION PLAN

The RAP outlines various remedial options (as summarised in Section 4.6) with the preferred option being on-site containment and capping. However, off-site disposal and validation of exposed natural or residual fill was selected as the primary remedial method for this site. This remedial method was chosen due to:

- the site was a net cut area. Containment and capping of impacted soils were not conducive with site development levels
- project staging restrictions meant containment cells in other areas of the schools could not be excavated/constructed ahead of the site remediation works.

The exception to the above was remediation of the Ramp 9 area, which was undertaken at a later stage and after the primary off-site disposal event at the site. Ramp 9 remediation commenced in July 2020 by which time a burial pit had been excavated in the eastern Stage 1 audit area. Grindley transferred stripped contaminated fill materials to the burial pit to avoid off-site disposal fees. Details of the containment and capping protocol for the eastern Stage 1 audit area will be captured in a subsequent validation report.

The off-site disposal remediation plan is summarised as follows:

- continuous stripping, stockpiling and load out of contaminated fill material
- as fill material is stripped, an environmental consultant was present to verify visually the fill material had been removed
- Once contaminated soils had been mostly removed, validation sampling and visual clearance inspections of the exposed natural surface, and any residual fill soils which could not be removed (e.g. around tree protection areas) were undertaken.

Plans showing areas remediated, and areas of residual contamination can be reference in Figure 4, Appendix A.

6.2 REMEIDIATION OBJECTIVES AND VALIDATION ASSESSMENT CRITERIA (VAC)

6.2.1 OBJECTIVES

The objective of the remediation works is to remediate identified contamination impacts at the site in accordance with the WSP, 2020 RAP to render the site suitable for ongoing use as a primary school and kindergarten. The methodology for the remediation and validation of the site, as outlined the WSP 2020 RAP and explained in Section 6.1 was considered appropriate to achieve this objective.

6.2.2 ASSESSMENT CRITERIA

The following tables (also presented within Section 5 of the RAP) provide the adopted criteria for contaminants of potential concern (COPC) at the site.

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Table 6.1 Adopted health investigation levels

ANALYTE	HIL A – LOW DENSITY RESIDENTIAL[1] (mg/kg)
Metals	
Arsenic	100
Cadmium	20
Chromium IV	100
Copper	6000
Lead	300
Mercury	40
Nickel	400
Zinc	7400
Polycyclic aromatic hydrocarbons (PAH)	
Carcinogenic PAHs as benzo(a)pyrene toxicity equivalent quotient (TEQ)	3
Total PAHs	300

(1) NEPM (2013) Schedule B1, Table 1A (1)

Table 6.2 Adopted health screening levels

ANALYTE	HSL A – RESIDENTIAL (SAND 0 – 1 M)[1] (MG/KG)
Benzene	0.5
Toluene	160
Ethylbenzene	55
Xylenes	40
Naphthalene	3
Total recoverable hydrocarbon (TRH) C_6 - C_{10} Fraction minus BTEX (F1)	45
TRH >C_{10}-C_{16} less Naphthalene (F2)	110

(1) NEPM (2013) Schedule B1, Table 1A (3)

NL – Non limiting

Table 6.3 Asbestos health screening levels

Analyte	HSL (w/w per cent)
	RESIDENTIAL A
Bonded ACM	0.01 per cent
FA an AF (friable asbestos)	0.001 per cent
All forms of asbestos	No visible asbestos for surface soil

Table 6.4 Adopted EILs/ESLs

ANALYTE	EIL – URBAN RESIDENTIAL / PUBLIC OPEN SPACE (MG/KG)	ESL – URBAN RESIDENTIAL / PUBLIC OPEN SPACE (MG/KG)
Metals		
Arsenic	100	-
Copper	190	-
Nickel	170	-
Zinc	400	-
Polycyclic aromatic hydrocarbons		
benzo(a)pyrene	-	0.7
Petroleum hydrocarbons		
F3	-	1,300
F4	-	5,600
Toluene	-	105

1. ESL and EIL concentrations for; F1 (180 mg/kg), F2 (120 mg/kg), benzene (65 mg/kg), ethylbenzene (125 mg/kg), xylenes (45 mg/kg), chromium IV (190 mg/kg) and lead (1,100 mg/kg) have been excluded as these are above site adopted HILs.

6.3 DESCRIPTION OF REMEDIAL ACTIVITIES

Details of the remediation work undertaken within the site are provided in the following subsections.

6.3.1 SOIL STRIPPING AND LOAD OUT

Within the site, impacted soils predominantly comprising loose sandy gravelly fill, were excavated by a 5-to-10-tonne excavator from surface to approximately 0.3 m until natural underlying clay was encountered.

As contaminated soils were stripped, they were consolidated in temporarily stockpiles placed on top of existing contaminated areas. The remediation work was undertaken systematically commencing from the eastern side of the site adjacent to the hoarding and progressed westward towards Garfield Street. The 10-tonne excavator was used for bulk stripping and loading trucks while the 5-tonne machine was used for detailed scraping work around hoarding edges and the OSD tank excavation.

Once an area has been satisfactorily scrapped down to natural clay, the area was considered remediated (pending final validation sampling and clearance inspections) and the asbestos removal zone was advanced.

Asbestos removal zones were delineated by bollards and caution tape throughout the remedial works and were an effective means of preventing cross contamination of machinery and personnel from asbestos removal areas and remediated areas.

Refer to Appendix C for example of temporary placement of excavated materials.

During the disposal of the stockpiled material, the 10-tonne excavator loaded trucks directly adjacent to the site entry gate from Garfield Street. Geotextile material was placed at the truck entry point to prevent truck wheels from contacting

contaminated surface soils. Trucks were not overloaded, and care was taken to minimised spillage during loading. In the final stages of remediation, all machinery used during the contaminated fill disposal was decontaminated on geotextile material with hand tools and hoses to remove excess dirt. The final asbestos removal event involved scraping and disposing the geotextile material used to protect underlying soils during decontamination works, and also to protect truck wheels.

All excavated material within the site was transported to a facility licenced to receive the waste. Refer to Section 6.6 for further details regarding disposal.

Western stage 1 area was remediated during Stage 1 of the RAP with fill material being excavated and removed offsite.

6.3.2 CAPPING LAYER PLACEMENT

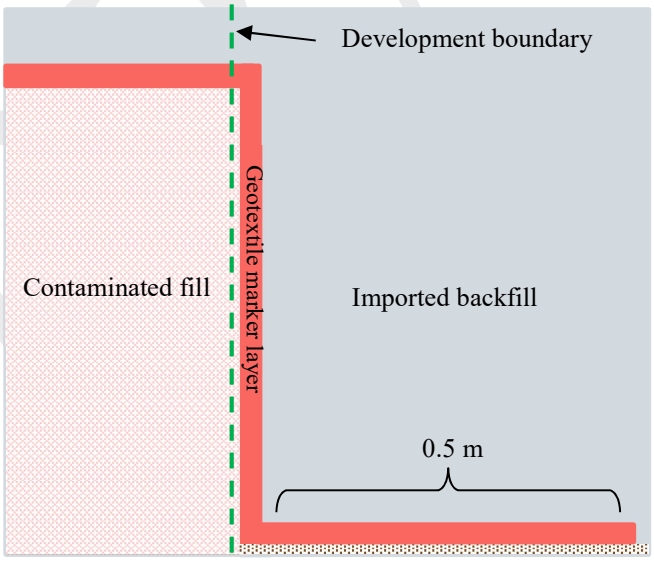
In accordance with Section 3.4.4 of the RAP, capping was required for walls of exposed contaminated fill which remained along the boundaries of the development area. Following excavation and disposal, a geotextile material was placed directly over residual soils and to 0.5 m beyond the toe of the wall into excavation areas and was subsequently pinned into place. Following placement of the geotextile marker layer, certified quarried products were placed against the geotextile as backfill.

The specification of the geotextile material was Terrazo N/Woven A1F 4x100m roll, which was purchased from Polyfabrics. WSP RAP 2020 did not specify a colour for the geotextile material. However, the geotextile material colour chosen was white as it served the purpose of being highly visible against dark brown clay backdrops.

The pinning was undertaken using 150 mm retaining pins (refer to Appendix C, Photo 38) which were secured into the concrete retaining walls or formwork structures.

Refer to Sections 7.2 and 7.3 for further details regarding importation of material. A cross section of a completed capping layer with thicknesses is shown in Figure 6.1 below. The boundary survey (Appendix J) represents the contractual boundary and excavation edge, where geotextile was placed.

Figure 6.1 Capping design for exposed contaminated walls



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7 DISPOSED AND IMPORTED MATERIAL

7.1 WASTE DISPOSAL

Waste was classified by WSP within the site as per Section 4.6. Waste disposal details are provided in Table 7.1. All waste for Block H was disposed by Walan Construction Pty Ltd to Bingo Waste Services Pty Ltd operating at Eastern Creek Ecology Park, 1 Kangaroo Avenue, Eastern Creek, NSW 2766. A total of 1287.50 tonnes of material were disposed.

Table 7.1 Waste disposal summary

DATES	TONNES (PER DAY)	CLASSIFICATION	REPORT	MATERIAL	FACILITY
15/04/2020	179	Based on the locations of the samples and their analytical results, Block H area was classified as '*Special Waste (asbestos) – within a soil matrix chemically consistent with general solid waste – non-putrescible'*	WSP, 2020 WC	Sandy gravelly fill with inclusions of building rubble and other anthropogenic material	Bingo Waste Services Pty Ltd- 1 Kangaroo Avenue, Eastern Creek, NSW 2766
16/04/2020	294.14				
17/04/2020	247.96				
18/04/2020	238.96				
20/04/2020	187.48				
21/04/2020	106.84				
22/04/2020	33.12				

Copies of the waste disposal dockets and tipping register is included in Appendix D. Additionally:

- asbestos contaminated waste excavated from Ramp 9 (approximately 90m^3) was transferred to the Block G burial pit (100 m from the Ramp 9 Gate) via a dump truck through Fullagar Road.
- Reworked and natural clay material excavated from the area assessed by TP01 – TP07 was transferred to Block G for reuse as part of detailed excavation works. WSP understands that no natural clay material was required to be excavated from the TP06 and TP07 area. Once overlying asphalt and gravel material was removed, formwork for concrete pouring was installed on the exposed natural clay surface.

7.2 IMPORTED MATERIAL

7.2.1 LYNWOOD HARDROCK QUARRY

Following clay validation and placement of the geotextile marker layer along the exposed walls, quarried material was required to be imported to comply with the requirements of the WSP, 2020 RAP and serve as a suitable engineering base for the concrete. Although, the quarried material cannot be classified as VENM as it does not satisfy the definition of "waste" (EPA 2020), the material is consistent with the requirements of the RAP.

The imported material details are provided in Table 7.2.

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Table 7.2 Imported material summary

DATES	TONNES PER DAY	BOGIES PER DAY	SOURCE ADDRESS	REPORT REFERENCES	STOCKPILE / MATERIAL
14/05/2020	55.64	5	Lynwood Hardrock Quarry – Lynwood Quarry, Marulan, NSW Material delivered by haulage company - Walan.	DGB 20 - 2020 Extraction Zone VENM Assessment Report (November 2019) ENM exemption for primary scalp material from Lynwood quarry Report by Construction Sciences Pty Ltd (June 2019) Blue metal Aggregate 20mm – Concrete Aggregate Quality/Durability Report by Construction Sciences Pty Ltd (February 2020)	Blue metal aggregate 20mm (55.64 tonnes) and DGB20 (total 59 bogies)
15/05/2020	209	19			
18/05/2020	231	21			
25/05/2020	66	6			
29/05/2020	99	9			
11/06/2020	44	4			

To satisfy the importation requirements of the WSP, 2020 RAP, WSP completed additional testing (14/05/2020) of the material sourced from Lynwood Hardrock Quarry – Lynwood Quarry, Marulan, NSW. Three soil samples (each comprising a composite and discrete sample) were collected and analysed as part of confirmatory testing. Concentrations of TRH, BTEXN, PAH, foreign material, asbestos (presence/absence) were below their respective laboratory limits of reporting (LORs) (Laboratory Report 719520-S). Concentrations of heavy metals were within the acceptance criteria for ENM. WSP also reviewed source site documentation and undertook an inspection of this material upon importation to verify the physical appearance of the material was the same as that presented in the provided documentation.

Table 7.3 Lynwood Hardrock Quarry Summary Table

SOURCE ADDRESS	LYNWOOD HARDROCK QUARRY – LYNWOOD QUARRY, 278 STONEY CREEK ROAD , MARULAN, NSW
History of potentially contaminating activities	A search of the NSW EPA contaminated land record of notices found that the site, nor any site within 1 km is listed. The site performs activities licensed by the Environment Protection Authority (EPA) under Schedule 1 of the Protection of the Environment Operations Act 1997. The site currently holds licenses crushing, grinding or separating and for extractive activities, both licenses are up for review in 2023. The site is listed as having a low probability of acid sulfate soils occurring and is not within an area of naturally occurring asbestos.
Material description and observations.	Blue Metal Aggregate (20mm)
Total volume imported to site.	55.64 tonnes

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Sampling density and pattern.	Three samples (each comprising a composite and discrete sample) were collected from the stockpile. Locations were evenly distributed across the stockpile.
Sampling method.	Chemical samples collected using a grab method with nitrile gloves changed between sample locations. Foreign material samples were collected using a stainless-steel shovel.
List of COPCs.	TRH, BTEXN, PAH, foreign material and asbestos (presence/absence)
Brief written summary of results.	Concentrations of TRH, BTEXN, PAH, foreign material, asbestos (presence/absence) were below their respective laboratory limits of reporting (LORs) (Laboratory Report 719520-S). Concentrations of heavy metals were within the acceptance criteria for ENM.
WSP conclusions on suitability for importation.	This material cannot be classified as VENM, due to it being a processed product, however the lack of concentrations of contaminants exceeding ENM guidelines indicates that the source material is consistent with the environmental quality of VENM.

Supporting documentation including the certificate covering letter for the material, quarry licence, waste classifications, and importation dockets/register is included in Appendix E-1 and E-2.

7.2.2 ARDMORE PARK (BUNGONIA) QUARRY

To supplement the imported material sourced from Lynwood Quarry, additional quarried aggregate material was imported from Ardmore Park (Bungonia) Quarry to the site. A total of 72 tonnes of aggregate was imported with details provided in Table 7.3.

Table 7.4 Imported material summary

DATES	TONNES PER DAY	SOURCE ADDRESS	REPORT REFERENCES	STOCKPILE / MATERIAL
13/05/2020	14	Ardmore Park Quarry (5152 Oallen Ford Road, Bungonia) Material delivered by haulage company – ANS Logistics.	Analytical results, lab reports, photos provided in Appendix E3.	Blue metal aggregate 10mm (72 tonnes)
20/05/2020	10			
21/05/2020	24			
27/05/2020	12			
23/06/2020	12			

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To support the approval of importation and in compliance with the importation requirements of the WSP, 2020 RAP, WSP completed additional testing (on 17/06/2020) of the Ardmore Park (Bungonia) Quarry material. Three soil samples (DGB01 – DGB03) were collected from a representative stockpile at the source site and analysed for TRH, BTEXN, PAHs, Metals, OCP/OPP, PCB and asbestos. Heavy metals concentrations were all within acceptable background ranges and all other concentrations were below laboratory LORs. WSP also reviewed source site documentation accompanying the material and inspected the material upon arrival at site to verify its consistency with that inspected at the quarry.

Table 7.5 Lynwood Hardrock Quarry Summary Table

Source Address	"ARDMORE PARK" QUARRY, 5152 OALLEN FORD ROAD, BUNGONIA
History of potentially contaminating activities	A search of the NSW EPA contaminated land record of notices found that the site, nor any site within 1 km is listed. The site performs activities licensed by the Environment Protection Authority (EPA) under Schedule 1 of the Protection of the Environment Operations Act 1997. The site currently holds licenses crushing, grinding or separating and for extractive activities, both licenses are up for review in 2023. The site is listed as having a low probability of acid sulfate soils occurring and is not within an area of naturally occurring asbestos.
Material description and observations.	Blue metal aggregate (10mm)
Total volume imported to site.	72 tonnes
Sampling density and pattern.	Three samples (each comprising a composite and discrete sample) were collected from the stockpile. Locations were evenly distributed across the stockpile.
Sampling method.	Samples collected using a grab method with nitrile gloves changed between sample locations.
List of COPCs.	TRH, BTEXN, PAHs, Metals, OCP/OPP, PCB and asbestos
Brief written summary of results.	Heavy metals concentrations were all within acceptable background ranges and all other concentrations were below laboratory LORs
WSP conclusions on suitability for importation.	This material cannot be classified as VENM, due to it being a processed product, however the lack of concentrations of contaminants exceeding ENM guidelines indicates that the source material is consistent with the environmental quality of VENM.

Copies of the importation dockets, imported aggregate reports and analytical summary results are included in Appendix E.

8 SAMPLING & ANALYSIS PLAN & METHODOLOGY

As fill material was excavated throughout western portion of stage 1 area, grid-based validation sampling was progressively undertaken when natural clay surfaces were exposed, or excavation/remediation was considered complete.

Section 6.2 of the WSP RAP 2020 sets the validation requirements for clays and fill material which are to remain on-site.

In accordance with the RAP, chemical and asbestos validation samples were collected between 14th April 2020 and 13rd September 2020 from:

- exposed natural clay walls and base of the OSD detention basin and TP01 – TP07
- residual fill material within tree protection zones; and
- stockpiles of excavated backfill sand around the OSD tank (STP01 and STP02).

A table summarising the final validation data and purpose is provided in Section 9.1.

The excavation and sampling methods are detailed in Table 8.1 below, and the sampling locations are presented in Figure 4 Appendix A.

Half face respirator masks with P2 filters, Type 5, Category 3 disposable suits and disposable nitrile gloves were worn during all sampling activities to prevent the potential inhalation of asbestos fibres. The nitrile gloves were changed between sampling locations to prevent cross-contamination. The spade that was used for sampling was decontaminated between sampling locations using a phosphate-free detergent (Decon 90) and water solution, and subsequently rinsing again in water.

The following table summarises the methodologies employed during the investigation.

Table 8.1 Field Methodologies

TASK	METHODOLOGY
Soil screening (residual fill only)	For residual fill material in tree protection zones, hand excavated test pits were undertaken for asbestos screening. At each location a 10 L soil sample of surface material (0.0 – 0.1 m) was collected and passed through a 7mm sieve or spread out on contrasting coloured plastic sheet and inspected for ACM fragments. Any ACM fragments were collected and placed in a clip lock sample bag for weighing and asbestos presence analysis.
Air monitoring	During the asbestos remedial works, airborne asbestos fibre monitoring was undertaken by the field consultant using calibrated portable air sampling pumps. Monitoring locations were determined by the field consultant and four monitors (minimum) were placed on the boundaries of the surrounding work area. At the end of each monitoring period, the cowls containing the sample filters were collected and analysed at a NATA-accredited laboratory. Monitoring works were conducted in accordance with NOHSC Guidance Note on the Membrane Filter Method for Estimating Asbestos Fibres 2nd Edition (NOHSC:3003 [2005]).
Soil sampling	Soil samples were collected directly from the shovel using disposable nitrile gloves. All samples collected were placed in dedicated laboratory supplied glass jars (chemical) and clip lock plastic bags (asbestos).
Sample handling/ preservation	Soil samples were stored in an insulated cooler box with ice immediately after sampling. The samples were kept chilled prior to and during delivery to national association of testing

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TASK	METHODOLOGY
	authorities (NATA) accredited laboratory via a courier under appropriate 'chain of custody' documentation.
Decontamination	Site equipment underwent decontamination with (Decon 90) in between sample locations.
Quality Assurance/ quality control (QAQC)	The following QA/QC samples were collected: • Soil duplicate samples were collected in the field at a rate of 1 in 20 primary samples for analysis by each of the primary and secondary laboratories. Field duplicate soil samples were collected from soil immediately adjacent to the primary sample by placing approximately equal portions of the primary sample into two sample jars. Trip spike and trip blank samples were carried throughout the excavation and soil sampling for assessment of potential volatile losses and cross contamination

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9 VALIDATION RESULTS & DISCUSSION

9.1 SUMMARY OF ANALYTICAL RESULTS

The final validation data set comprised 53 chemical and 48 asbestos quantification samples, summarised as follows:

- 19 chemical and 18 asbestos quantification from the exposed clay layer (VS01 to VS16, VS05A and VS07A);
- 4 chemical and 5 asbestos quantification from the tree protection zones (VS17, VS18, VS19, VS20, VS21);
- 6 chemical and 8 asbestos quantification from wall of the OSD tank (VS03A - VS03I);
- 3 chemical and 3 asbestos quantification from the OSD tank base (Tank Base 01 to 03);
- 5 chemical and 2 asbestos quantification from the Ramp 9 area (R01, R02, BR02, BR04 and BR06);
- 6 chemical and 6 asbestos quantification from STP01 and STP02 (STP01 – STP01 and STP02 – STP02B);
- 10 chemical and 6 asbestos quantification from exposed clay on southern boundary and north of the COLA (TP01 – TP07).

During validation works, some initial failures of the validation criteria were identified. A summary of the failures and subsequent remediation and revalidation works is as follows:

- during detail excavation of the western OSD wall, minor ACM fragments were discovered within a reworked clay wall after intial validation sampling. An emu pick was undertaken to remove visible ACM and the wall revalidated by collecting 2 samples (VS03G_0.1 and VS03H_0.1).
- the ACM % w/w result for OSD wall validation sample VS03G_0.1 (0.041%) was above the validation criteria. Soils adjacent to and behind VS03G were excavated and removed and an additional sample was collected (VS03I_0.1) to re-validate. No asbestos was identified in VS03I_0.1 and the ACM %w/w concentration was compliant with the validation criteria.

Following the completion of surface scrapping and final contaminated stockpile removal within the site, a WSP LAA inspected the area to ensure that all ACM was removed. 2 separate clearance certificates for the site and equipment used were provided by the WSP LAA, after the removal works were completed. Clearance certificates for are presented in Appendix F.

Within the final validation sampling data set, no contaminants of concern were recorded above the adopted validation criteria for human health and ecology.

The analytical results and laboratory reports are presented in Appendix G, Appendix H and Appendix I respectively.

9.2 VISUAL VALIDATION OF EXCAVATIONS

Validation of asbestos impacted areas were conducted in accordance with the WA DER (2019), *Guidelines for the Assessment, Remediation and Management of Asbestos - Contaminated Sites,* which requires the visual inspection and clearance of all excavation floors and walls by a WSP Licenced Asbestos Assessor (LAA) post removal of impacted material. Visual clearance certificates are presented in Appendix F.

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9.3 CAPPING LAYER

WSP was not present on-site during the initial installation of the capping layer of exposed walls. The laying of geotextile occurred on a weekend of planned asbestos removal works where an LAA was unavailable. The geotextile was inspected and photographed by WSP on 15th May 2020 (refer to Photos 21 and 22). This approach was slightly different to the approach outlined within the RAP but still adhered to a reasonable standard. Grindley Construction has also provided photographic evidence of the capping layer placement throughout the site and the capping layer pinned in place.

Furthermore, the photographs also show the imported quarried product from Lynwood Hardrock and Ardmore Park, including compaction of this product on top of the geotextile layer. Photographs provided show exposed walls within the contaminated fill lined with a highly visible geotextile marker layer to the edge of the development area and to 0.5 m beyond the toe of the wall into the excavation.

After the installation of the capping layer, a survey was conducted to verify the limit of the geotextile capping. The extent of the survey did not go beyond the protection of the vertical wall where there is no capping. The boundary survey (refer to Appendix J) represents the contractual boundary and excavation edge, where geotextile was placed.

Refer to Appendix C for photographs of the imported materials and progression of the installation of the capping layer.

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10 QUALITY ASSURANCE & QUALITY CONTROL

10.1 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 is referenced in the NEPM (2013). DQOs ensure that:

- the study objectives are set
- appropriate types of data are collected (based on contemporary land use and chemicals of concern)
- 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 data quality objectives (DQOs) for this investigation were designed to meet the objectives of the WSP RAP (2020). The DQOs adopted for this investigation are described in Table 10.1.

Table 10.1 Data quality objectives discussion

STEP	OBJECTIVE	COMMENTS
1	State the problem	The site has historically been used as a kindergarten and primary school. The site is undergoing redevelopment and upgrades for certain areas across the school property. Areas underlain by fill material impacted by asbestos have been identified across the redevelopment. The 'problem' is that the areas impacted by contamination require environmental management and remediation during and post construction works. The management and remediation of the site requires validation so that an Occupation Certificate (OC) can be issued.
2	Identify the decisions/goals	The goal of the remedial works is to remediate the areas of soil impacted at the site via off -site disposal of impacted soils to mitigate the potential human health and/or environmental risks for the proposed land use. The goal of the site validation works is to verify remediation was done in accordance with WSP RAP 2020 and complies with adopted health and ecological criteria with no evidence of ongoing risk to site users for the proposed land-use as a primary school.

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STEP	OBJECTIVE	COMMENTS
3	Identify inputs to the decision	The following inputs were considered: • concentrations of contaminants presented in previous and current investigations. • WSP RAP, 2020. • Asbestos air-monitoring and clearance certificates provided by an LAA. • NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste. • Quality of imported backfill materials including consideration of NSW EPA (2014) Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment operations (Waste) Regulation.
4	Define the boundaries of the study	The site is located at 70-100 Fullagar Road, Wentworthville NSW and comprises part Lot 69 to 92 in Deposited Plan 963. The lateral extent of the validation is the site boundaries (refer to Site Survey in Appendix J). The vertical extent is bounded by the depths of fill material underlying the site (maximum depth of 1.0 mBGL). Temporal boundaries for this validation are from 14 April 2020 through to 23 September 2020 (completion of remediation works).
5	Develop a decision rule	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. The parameters of interest are the concentrations of COPCs in validation samples collected at the site. An assessment of the concentrations of COPCs against the adopted validation criteria (as outlined in Section 9) is undertaken to determine the potential risks to receptors associated with residual material at the site following remediation, and the suitability of the site for the proposed land use as a primary school. Should concentrations exceed the validation criteria outlined in Section 9, further investigation, management and/or remediation may be necessary to further characterise or delineate the identified impacts and/or mitigate the risk to identified receptors, in accordance with WSP RAP 2020.
6	Specify performance and acceptance criteria	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 Tables 10.2 and 10.3.
7	Optimise the plan for obtaining data	To ensure the site validation works satisfy the DQOs, the following was implemented to optimise the design for obtaining data: • validation samples will be located based on the findings of previous environmental investigations and remedial works conducted at the site, and will be collected at a minimum frequency outlined in with the WSP RAP, 2020; and • validation samples will be analysed for COPCs based on the requirements outlined in the RAP (WSP RAP, 2020) and additional COPCs for any additional contaminant sources or unexpected finds (as required). In addition to the above, DQIs (for accuracy, comparability, completeness, precision and reproducibility) have also been established to set acceptance limits on field methodologies and laboratory data collected and are presented in Tables 10.2 and 10.3.

10.2 DATA QUALITY INDICATORS

10.2.1 FIELD DATA QUALITY INDICATORS

The QA/QC program adopted in the field was assessed against various data quality indicators. A summary discussion of the field data quality indicators (DQIs) is provided in Table 10.1.

Analytical results and relative percent difference (RPD) calculations for the intra- and inter-laboratory field replicates are provided in Appendix H. The precision of the results for each analyte between the primary sample and the field replicates were determined by calculating the RPD, as follows:

$$RPD = \frac{(Concentrat\ \ ion\ 1 - Concentrat\ \ ion\ 2)\ x\ 100}{(Concentrat\ \ ion\ 1 + Concentrat\ \ ion\ 2)\ /\ 2}$$

Based on Australian Standard AS 4482.1-2005, a field replicate RPD within the range of 30% to 50% is considered acceptable. Generally higher RPD values occur for organic compounds where low concentrations of an analyte are recorded.

Table 10.2 Field data quality indicators

QA/QC REQUIREMENT	COMPLETED	COMMENTS
Appropriate sampling strategy used and representative samples collected	Yes	Disposable nitrile gloves were used and were changed between locations during soil sampling. The sampling methodology was in accordance with WSPs Standard Operating Procedures (SOPs), which is in line with and based on the Australian Standards for the sapling of contaminated soils. Various suitable qualified environmental scientists and hazardous materials consultants (LAA) conducted the site inspections and investigations.
Appropriate and well documented sample collection, handling, transportation and decontamination procedures	Yes	All samples collection and transportation were conducted in accordance with WSP Standard Operating Procedures which have been developed in accordance with industry guidelines, standards and best practice.
Chain of custody documentation completed	Yes	All samples were transported under appropriately detailed chain of custody documentation. Signed chain of custody documents are included with the laboratory certificates provided in Appendix G.
Blind field duplicateds collected	Yes	Three intra-laboratory (QA01, QA03, QA1) and inter-laboratory (QA01A, QA03A, QA1A) soil sample were collected during the site works and were submitted to the laboratory for the analysis of selected contaminants. Intra- and inter-laboratory duplicates were collected at a rate of one duplicate pair per 20 primary samples. Results of QA/QC analysis are provided in Appendix H.
Acceptable RPD results	Yes	With exception of an RPD result of 36% for QA03A (VS14_0.0) for C16 – C34, all other TRH, BTEX and PAHs were below LOR in primary and duplicate samples and an RPD value of 0% adopted. Heavy metals; arsenic, chromium, copper, lead, mercury, nickel and zinc all recorded RPDs above the nominal 30% - 50% RPD criteria in one or more duplicate sample. RPD exceedances ranged from 57% - 120%.

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QA/QC REQUIREMENT	COMPLETED	COMMENTS
		The RPD exceedances are likely to be due to sample heterogeneity and possible variance in the laboratory extraction or analytical methods. All RPD results are within an order of magnitude of the criteria, and percentage variance can be exacerbated by concentrations nearer the detection limit. Overall, the RPD results support a reliable and representative data set. QA/QC results are presented in Appendix H.
Required numbers of blank and spike samples collected and/or prepared	Yes	Three soil trip blanks and three trip spikes accompanied the transport of samples during the entire journey from the preparing laboratory to the field sampling location, and back to the analytical laboratory. These were to assess for potential volatile losses and the ensure no cross contamination occurred in transit. Results are provided in Appendix H.
Acceptable trip and rinsate blank results as well as trip spike results	Yes	Detections of contaminants within the trip and rinsate blanks were below the laboratory LORs for all analytes during the sampling works completed. Trip spike results ranged from 75%-110% recovery which is considered acceptable for the purpose of this validation report (±30%). QA/QC results are presented in Appendix F.
Samples delivered within sample holding time and with correct preservative(s)	Yes	Samples were delivered to the laboratories within the sample holding times and in laboratory-supplied containers.

10.2.2 LABORATORY DATA QUALITY INDICATORS

The results of laboratory internal quality control procedures are provided within the laboratory analytical reports (Appendix G). The acceptance criterion for internal laboratory replicates is generally set at an RPD of 30% to 50%. Laboratory recoveries should be in the range 75% to 125%. Table 8.2 summarises project conformance to laboratory QA/QC procedures.

Table 10.3 Laboratory data quality indicators

QA/QC REQUIREMENT	COMPLETED	COMMENTS
Samples extracted and analysed within relevant holding times	Yes	Refer to Interpretive Quality Control reports (Appendix I).
All analyses are NATA accredited	Yes	SGS, WSP laboratory and Eurofins are NATA accredited for all the analyses performed.
Appropriate analytical methodologies used, in accordance with Schedule B(3) of the NEPM	Yes	Refer to the Interpretive Quality Control reports (Appendix I).
Acceptable laboratory Limits of Reporting (LORs) adopted	Yes	The laboratory LORs adopted were appropriate for the adopted criteria. A summary of the limits of reporting adopted are provided in the laboratory analysis reports (Appendix G).

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QA/QC REQUIREMENT	COMPLETED	COMMENTS
Acceptable laboratory QC results	Yes	Internal laboratory quality controls demonstrated acceptable recoveries and passes for method blanks, method spikes, control and duplicate samples. Where exceedances outside the laboratory recovery or RPD's were noted, acceptable justification was provided by the laboratory. Any laboratory quality non-conformance are not considered to compromise the validity of the analytical results obtained. The results of internal laboratory quality control procedures are provided within the laboratory analysis reports (Appendix G).

10.3 FIELD QA/QC PROCEDURES

Error! Reference source not found. indicates conformance to field QA/QC procedures.

Table 10.4 Field QA/QC procedures

QA/QC REQUIREMENT	COMPLETED	COMMENTS
Appropriate sampling strategy used and representative samples collected	Yes	Disposable nitrile gloves were used and were changed between locations during soil sampling. The sampling methodology was in accordance with WSPs Standard Operating Procedures (SOPs), which is in line with and based on the Australian Standards for the sapling of contaminated soils.
Appropriate and well documented sample collection, handling, logging, transportation and decontamination procedures	Yes	All sample collection and transportation were conducted in accordance with WSP standard operating procedure (SOP) which have been developed in accordance with published industry guidelines and standards and best practice.
Chain of custody documentation completed	Yes	All samples were transported under appropriately detailed chain of custody documentation.

10.4 LABORATORY QA/QC

Laboratory QA/QC procedures generally include the performance of several internal checks of data precision and accuracy that are aimed at assessing possible errors associated with sample preparation and analytical techniques.

The results of internal laboratory quality control procedures are provided within the laboratory analysis reports in Appendix C. **Error! Reference source not found.** indicates conformance to laboratory QA/QC procedures.

Table 10.5 Laboratory QA/QC Procedures

QA/QC REQUIREMENT	COMPLETED	COMMENTS
Samples extracted and analysed within relevant holding times	Yes	Refer to primary and secondary lab Interpretive Quality Control reports.
All analyses NATA accredited	Yes	Laboratory is NATA-accredited for the analyses performed.
Appropriate analytical methodologies used, in	Yes	Analytical methodologies performed throughout the soil assessment have been in accordance with Schedule B (3) of the NEPM.

QA/QC REQUIREMENT	COMPLETED	COMMENTS
accordance with Schedule B (3) of the NEPM		
Acceptable LOR adopted	Yes, with exceptions	All LORs were below the adopted assessment criteria

10.5 QA/QC SUMMARY

The 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 useability.

The review of the laboratory QA/QC showed that contaminant concentrations in the blank analyses and spike recoveries were all within the acceptable range. Overall WSP considers that the analytical results provided by the laboratories are reliable and complete.

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11 CONCLUSION & RECOMMENDATION

11.1 CONCLUSIONS

Based on the implementation of the RAP, involving excavation and disposal works for the site between 14 April and 23 September 2020, WSP makes the following conclusions:

- No ACM was identified on the natural clay surface or within any remaining fill material around tree protection zones. As such all ACM % w/w concentrations were below adopted HSLs. As the validation works did not identify ACM above the adopted criteria, there is no evidence of an ongoing ACM risk to site users.
- All validation sampling locations selected for chemical analysis (TRH, BTEXN, PAH and eight heavy metals, with selected samples analysed for DDT) were below laboratory LORs and/or below adopted health and ecological criteria. As the validation works did not identify chemical concentrations above the adopted criteria, there is no evidence of an ongoing chemical risk to site users.
- Chemical and asbestos sampling results of STP1 and ST2 material assessed for reuse were compliant with the site re-use criteria provided in the WSP, 2020 RAP.
- With regards to the exposed boundary walls within contaminated fill, a geotextile marker layer to the edge of the development/excavated area has been placed. Based on WSP's inspection of the geotextile once installed, and review of supporting photographs, WSP considers the geotextile marker layer has been installed in accordance with the RAP and adequately protects site users from exposed fill walls (where evident).
- With regards to waste disposal, the recorded disposal tonnes equate to approximately 643.65 m^3 (ex-situ volume). WSP consider the sampling and analytical results are representative of the disposed materials, and have been disposed at a facility licenced to accept that material.
- With regards to imported material, WSP was present to inspect imported material upon arrival to the site and reconciled importation dockets with the source sites. Supporting documentation has been provided to WSP of the quarried material which in conjunction with WSP's confirmatory sampling shows all imported material satisfies the requirements of the WSP, 2020 RAP. WSP considers imported material does not present a risk to site users.

WSP considers the remediation and validation works undertaken within the western stage 1 area (site) at Wentworthville Public School, 70-100 Fullagar Road, Wentworthville NSW were conducted in accordance with the RAP and relevant guidelines and legislation. Based on the site observations and available laboratory analysis, validation results are compliant with adopted health and ecological criteria with no evidence of ongoing risk to site users for the proposed land-use as a primary school.

11.2 SITE AUDIT EXTENT

The extent of the is validation report and auditable area are provided in survey drawings included in Appendix J. WSP is aware of asbestos impacts in areas adjacent the to the site (e.g. underneath the COLA to the east of the site), which are excluded from this validation report and auditable area.

For areas adjacent to the site which have confirmed or suspected asbestos (or other contamination), and are within an eventual development Stage (eg further Stage 1 works or Stage 2 and Stage 3), these should be remediated and/or managed by a long-term environmental management plan (LTEMP).

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12 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (WSP) for Grindley Constructions Pty Ltd (Client) in response to specific instructions from the Client.

12.1 PERMITTED PURPOSE

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose.

12.2 QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client. Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (Conclusions) are based in whole or in part on information provided by the Client and other parties identified in the report (Information), those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

The Conclusions are reflective of the current Site conditions and cannot be regarded as absolute without further extensive intrusive investigations, outside the scope of the services set out in the Agreement and are indicative of the environmental condition of the Site at the time of preparing the Report. As a general principle, vertical and horizontal soil or groundwater conditions are not uniform. No monitoring, common or intrusive testing or sampling technique can eliminate the possibility that monitoring or testing results or samples taken, are not totally representative of soil and / or groundwater conditions encountered at the Site. It should also be recognised that Site conditions, including subsurface conditions can change with time due to the presence and concentration of contaminants, changing natural forces and man-made influences.

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

WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the Report.

12.3 USE AND RELIANCE

This Report should be read in its entirety and must not be copied, distributed or referred to in part only. The Report must not be reproduced without the written approval of WSP. WSP will not be responsible for interpretations or conclusions drawn. This Report (or sections of the Report) should not be used as part of a specification for a project or for incorporation into any other document without the prior agreement of WSP.

WSP is not (and will not be) obliged to provide an update of this Report to include any event, circumstance, revised Information or any matter coming to WSP's attention after the date of this Report. Data reported and conclusions drawn are based solely on the information made available to WSP at the time of preparing the Report. The passage of time; unexpected variations in ground conditions; manifestations of latent conditions; or the impact of future events (including (without limitation) changes in policy, legislation, guidelines, scientific knowledge; and changes in interpretation of policy by statutory authorities); may require further investigation or subsequent re-evaluation of the Conclusions.

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This Report can only be relied upon for the Permitted Purpose and may not be relied upon for any other purpose. The Report does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise. It is the responsibility of the Client to accept (if the Client so chooses) the Conclusions and implement any recommendations in an appropriate, suitable and timely manner.

In the absence of express written consent of WSP, no responsibility is accepted by WSP for the use of the Report in whole or in part by any party other than the Client for any purpose whatsoever. Without the express written consent of WSP, any use which a third party makes of this Report or any reliance on (or decisions to be made) based on this Report is at the sole risk of those third parties without recourse to WSP. Third parties should make their own enquiries and obtain independent advice in relation to any matter dealt with or conclusions expressed in the Report.

12.4 DISCLAIMER

No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies, corporate and its officers, employees and agents assumes no responsibility and will not be liable to any third party for, or in relation to, any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered or incurred by a third party.

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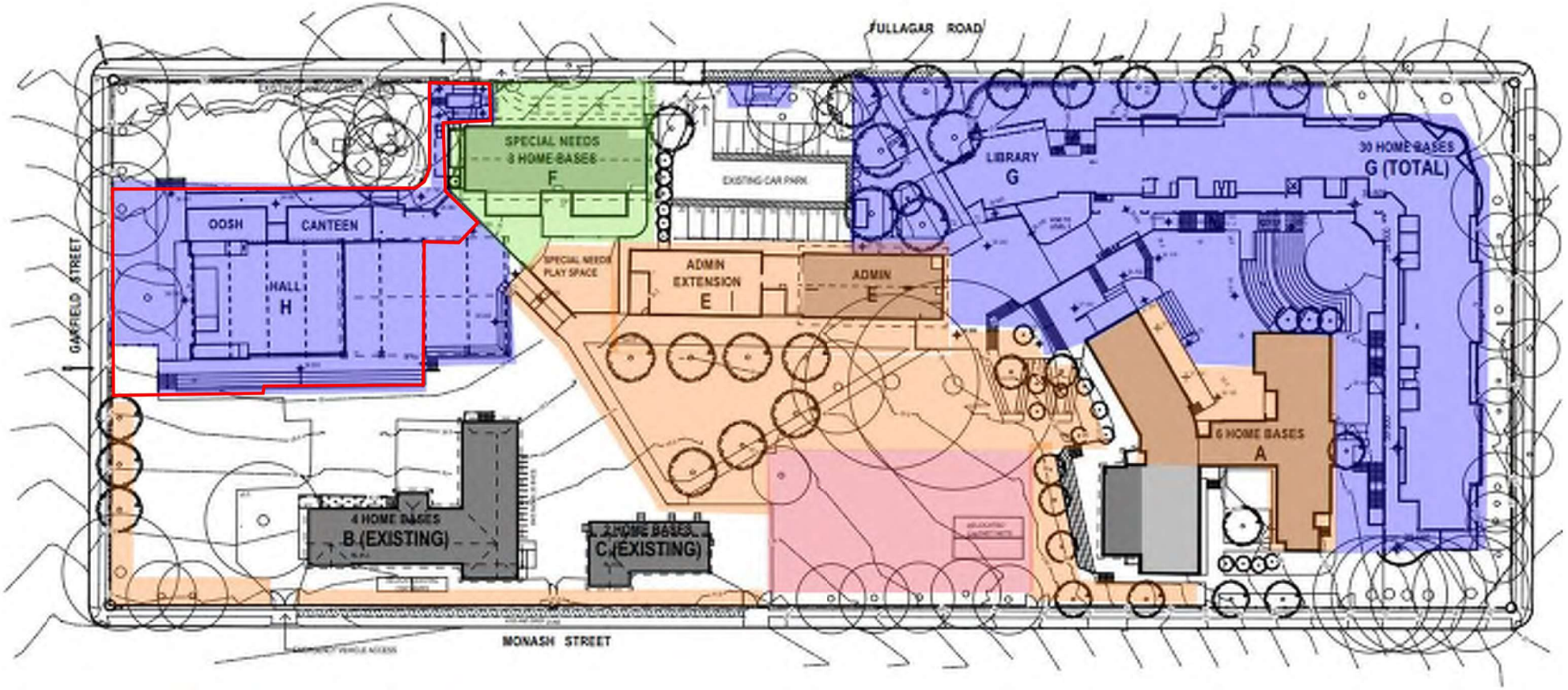
APPENDIX A

FIGURES

Legend

Approximate Site boundary

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	Site Location Plan
Project no.: PS119057	**Figure 1**



Legend

- SSDA # 9273 - Condition B12 Site Auditor Scope of Work - Stage 1
- SSDA # 9273 - Condition B12 Site Auditor Scope of Work - Stage 2
- SSDA # 9273 - Condition B12 Site Auditor Scope of Work - Stage 3
- Existing area to be inspected as per WSP RAP (Stage 2)
- Block H Remediation Extent and Auditable Area (indicative extrapolation from Appendix J)

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	Auditable Areas and Stages
Project no.:	PS119057

Figure 2

Legend

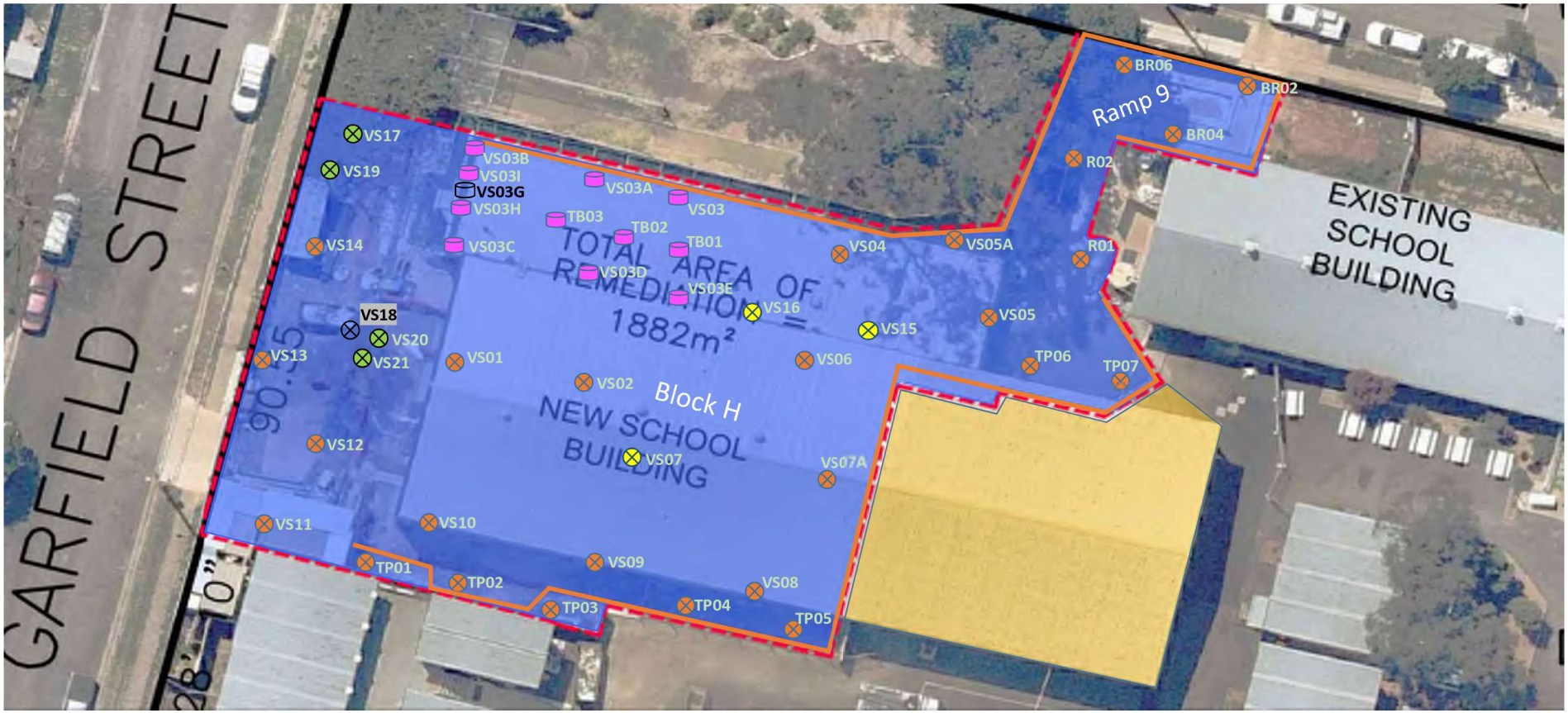
Historical Investigation Locations

- WSP, 2018
- EIS, 2017
- P. Clifton & Ass, 2020
- 4Pillars, 2020

- Western Validation Area Remediation Extent and Auditable Area (indicative extrapolation from Appendix J)
- Asbestos contaminated
- Compliant with HSL/HIL - A

- asbestos analysis only x 34
- asbestos and chemical analysis test pit x 12
- ACM logged
- ACM concentration exceeding HSL (test pit)
- V clay validation

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	H and G Block – Investigation Summary, April 2020
Project no.:	PS119057
	Figure 3



Source: Nearmap

Legend

- Western Validation Area Remediation Extent and Auditable Area (indicative extrapolation from Appendix J)
- Eastern portion of the COLA (not validated)
- OSD tank validation samples x 9
- Tree protection zone validation samples x 4
- Clay validation samples
- Trench validation samples x 3
- Sample subsequently excavated
- Geotextile placement locations

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	Validation sampling locations
Project no.:	PS119057

Figure 4

APPENDIX B

WSP, 2020 WASTE CLASSIFICATION REPORTS

Our ref: PS119057-CLM-LTR-001 RevA Block H

9 April 2020

Damien McGrath
Project Manager
Grindley Construction Pty Ltd
55 Grandview St, Pymble NSW 2073

Dear Damien

Waste Classification - Block H, Wentworthville Public School

WASTE CLASSIFICATION REPORT	
Date sampled	1 April 2020
Company	Grindley Construction Pty Ltd, ABN 42 003 586 687
Project name	Wentworthville Public School Waste Classification
Site address	70-100 Fullagar Rd, Wentworthville NSW 2145
Site history and Background	Wentworthville Public School has existed on the current site for 129 years. The school underwent construction between 1943 and 1961. It is understood that uncontrolled fill material would have been imported to the site during construction works and ground levelling. Grindley has provided WSP with two previous waste classification reports undertaken on the school property: - — 4Pillars Environmental Consulting, "*Waste Classification report, Wentworthville Public School, 70-100 Fullagar Road, Wentworthville, NSW*", dated 13 January 2020. — P.Clifton & Associates "*Waste Classification of In-Situ Fill Soils Containing Asbestos Cement Sheet Debris at the Wentworthville Public School, , 70-100 Fullagar Road, Wentworthville, NSW"* dated 11th January 2020. Both of the above reports determined that the soil tested was classified as Special Waste – Asbestos (in soils that meet the criteria for general solid waste non-putrescible).

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WASTE CLASSIFICATION REPORT	
Material identification and source	Block H consists of approximately 2,300m^2 of in-situ material. The area is covered in approximately 0.3m of sandy, gravelly fill, with inclusions of building rubble and other anthropogenic material. The underlying natural material is brown/grey/red sandy clay. Photos of the material can be found in Attachment B.
Samples collected	— TP1_0.1, TP1_0.3, TP1_0.2_FR — TP2_0.2, TP2_0.3 — TP3_0.2, TP3_0.25, TP3_0.2_FR — TP4_0.2, TP4_0.4 — TP5_0.1, TP5_0.4, TP5_0.1_FR — TP6_0.1, TP6_0.2 — TP7_0.1, TP7_0.2, TP7_0.1_FR — TP8_0.1, TP8_0.25 — TP9_0.1, TP9_0.2 — TP10_0.1, TP10_0.2 — TP11_0.1, TP11_0.2 — TP12_0.1, TP12_0.25 — QA01, QA01A — Trip blank, trip spike and rinsate A total of ten samples were tested for chemical analytes to provide the minimum sampling requirement for stockpiles between 200 and 2,500m^3 presented in the Industrial Waste Resource Guidelines – Soil Sampling published by the Victorian Environmental Protection Authority (EPA Victoria 2010). Given that the site has been used as a school for over 100 years, samples were analysed for a broad suite of analytes commonly associated with general urban land use.

WASTE CLASSIFICATION REPORT	
Sampling method	A test-pitting program was used in accordance with *NSW EPA Sampling Design Guidelines.* A total of 12 test pits were undertaken at Block H using the following methodology. — In-field visual screening of fill material and natural clay for the assessment of asbestos containing material (ACM) at up to three locations per test pit (approximately 0.1m, 0.3m and at the surface of natural material) using an excavator bucket. — One 500mL bag sample was taken per test pit location for the assessment of asbestos fines (AF) and fibrous asbestos (FA) directly from the excavator bucket. — Four asbestos air monitors were established during test-pitting works. — Two soil jar samples per test pit location were collected for chemical analysis directly from the excavator bucket. — Sieving of fill material was completed using a 7mm sieve and 10L bucket in sandy material. Natural clays were assessed by spreading out a 10L equivalent onto a contrasting coloured sheet and inspected for ACM. — Any fragments of ACM were removed for laboratory analysis. — All samples were collected using a new pair of nitrile gloves per sample. The excavator bucket was decontaminated using Decon 90 between locations.
Laboratory analytes	— Heavy metals (Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) — Total recoverable hydrocarbons (TRH) — Benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN) — Polycyclic aromatic hydrocarbons (PAHs) — Asbestos (presence/absence) — Select samples were analysed for polychlorinated biphenyls (PCBs) and pesticides.
Assessment criteria	The field observations and analytical results are compared to the applicable criteria presented in the NSW Environment Protection Authority (2014) *Waste Classification Guidelines* as amended.
Visual/olfactory evidence of contamination	Fill material in a majority of locations consisted of building rubble, bitumen and other anthropogenic inclusions. Fragments of ACM were recorded at TP1, TP3, TP5 and TP7. The fragments were submitted for laboratory analysis. No olfactory evidence of contamination was recorded.

WASTE CLASSIFICATION REPORT	
Analytical results and comparison	Concentrations of lead exceeded the Table 1, contaminant threshold CT1 criteria for general solid waste in samples TP1_0.1, TP2_0.2, TP3_0.2, TP4_0.2, TP12_0.1 and duplicate sample QA01. Concentration of all other analytes were either below the laboratory reporting limit or below the contaminant threshold CT1 criteria for general solid waste. Following toxicity characteristic leaching procedure (TCLP) tests, all samples were below the Table 2, General Solid Waste assessment criteria (TCLP1 and SCC1). The chemical summary table with relevant criteria can be found in Attachment C. Laboratory certificates are in Attachment D. For all soil samples, no AF/FA was detected. For all four fragments submitted, chrysotile asbestos was detected. The fragment at TP7 also contained amosite and crocidolite asbestos. Following % weight/weight soil analysis, the fragments at TP3, TP5 and TP7 exceeded NEPM (2013) HSL Residential A criteria. The results summary table with relevant criteria can be found in Attachment C. Laboratory certificates are in Attachment D.
Waste classification	**"SPECIAL WASTE – ASBESTOS WASTE WITHIN A SOIL MATRIX CHEMICALLY CONSISTENT WITH GENERAL SOLID WASTE – NON PUTRESCIBLE"**
Disposal Requirements: The material classified under this waste classification report is suitable to be disposed to a facility appropriately licensed to accept **Special Waste (Asbestos).** The suitability of the classified material for recycling must be assessed by the receiving facility.	

Note that this waste classification is considered correct as at the date of sampling. WSP is not responsible for changes to material composition and classification due to activities occurring after this date. This waste classification certificate only relates to the materials described in the 'Material identification and source' section and as delineated in Figure 2, Attachment A. Any other materials disposed off-site should be accompanied by their own discrete waste classification report.

The findings of this waste classification are subject to the limitations attached.

Yours sincerely

Leila Bowe
Graduate Environmental Engineer
Contaminated Land Management

Julie Porter
Principal Environmental Engineer
Contaminated Land Management

LIMITATIONS

Scope of services

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

Reliance on data

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

Environmental conclusions

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

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

Also, it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

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

Report for benefit of client

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

Other limitations

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

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

ATTACHMENT A
FIGURES

Legend

- Block H Investigation location
- Site boundary

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	Investigation Location
Project no.:	PS119057

Figure 1

Legend

Historical Investigation Locations

- WSP, 2018
- EIS, 2017
- P. Clifton & Ass, 2020
- 4Pillars, 2020

- Stage 1 Area
- Stage 1 Accessible Area
- asbestos analysis only
- asbestos and chemical analysis test pit
- ACM logged
- ACM concentration exceeding HSL (test pit)
- V clay validation

Client:	Grindley Constructions Pty Ltd
Project:	Wentworthville Public School – 70 – 100 Fullagar Road, South Wentworthville NSW
Title	H Block – Sampling Locations
Project no.: PS119057	**Figure 2**

ATTACHMENT B
MATERIAL PHOTOGRAPHS

	PHOTOGRAPHIC LOG (Appendix B)	
Client Name Grindley Construction Pty Ltd	**Site Location** Wentworthville Public School	**Project No.** PS119057

Photo No.	Date
1	01/04/2020

Description

TP1 fill profile (0.3m) overlaying natural brown/red clay.

Photo No.	Date
2	01/04/2020

Description

TP3 fill profile

wsp	**PHOTOGRAPHIC LOG (Appendix B)**

Client Name	**Site Location**	**Project No.**
Grindley Construction Pty Ltd	Wentworthville Public School	PS119057

Photo No.	**Date**
3	01/04/2020

Description

Asbestos containing material (ACM) found in TP3

Photo No.	**Date**
4	01/04/2020

Description

ACM found in TP5

	PHOTOGRAPHIC LOG (Appendix B)	
Client Name Grindley Construction Pty Ltd	**Site Location** Wentworthville Public School	**Project No.** PS119057

Photo No.	Date	
5	01/04/2020	

Description

Fill profile of TP7, ACM found within profile

ATTACHMENT C
SUMMARY RESULTS

	TRH																			
	C6 - C10		C6 - C10 less BTEX (F1)		C10 - C16		C10 - C16 less Naphthalene (F2)		C16 - C34		C34 - C40		C10 - C40 (Sum)		Sum of BTEX		Benzene		Toluene	
	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL	25	50	25	50	25	60	25	60	90	500	120	500	210	320	0.6	3	0.1	0.5	0.1	0.5
NSW 2014 General Solid Waste CT1 (No Leaching)																	10		288	
NSW 2014 General Solid Waste SCC1 (with leached)																	18		518	
NSW 2014 General Solid Waste TCLP1 (leached)																		500		14,400
NSW 2014 Restricted Solid Waste CT2 (No Leaching)																	40		1,152	
NSW 2014 Restricted Solid Waste SCC2 (with leached)																	72		2,073	
NSW 2014 Restricted Solid Waste TCLP2 (leached)																		2,000		57,600
Field ID	**Date**																			
QA01	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RN010420	**01-04-20**	-	<50	-	<50	-	<60	-	<60	-	<500	-	<500	-	<320	-	<3	-	<0.5	-	<0.5
TB010420	**01-04-20**	<25	-	<25	-	-	-	-	-	-	-	-	-	-	-	<0.6	-	<0.1	-	<0.1	-
TP1_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2_0.2	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
TP3_0.2	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4_0.2	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
TP9_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
TP10_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	100	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
TP12_0.1	**01-04-20**	<25	-	<25	-	<25	-	<25	-	<90	-	<120	-	<210	-	<0.6	-	<0.1	-	<0.1	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistics

Number of Results	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**10**	**1**
Minimum Detect	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**100**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration	**<25**	**<50**	**<25**	**<50**	**<25**	**<60**	**<25**	**<60**	**100**	**<500**	**<120**	**<500**	**<210**	**<320**	**<0.6**	**<3**	**<0.1**	**<0.5**	**<0.1**	**<0.5**
Average Concentration *	**12**	**50**	**12**	**50**	**12**	**60**	**12**	**60**	**52**	**500**	**60**	**500**	**105**	**320**	**0.3**	**3**	**0.05**	**0.5**	**0.05**	**0.5**
95% UCL (Student's-t) *	**12.5**	**50**	**12.5**	**50**	**12.5**	**60**	**12.5**	**60**	**64.9**	**500**	**60**	**500**	**105**	**320**	**0.3**	**3**	**0.05**	**0.5**	**0.05**	**0.5**

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 As Chromium VI

#2 Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Schedule B7).

#3 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.

#4 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.

#5 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#6 To obtain F2 subtract naphthalene from the >C10 - C16 fraction.

#7 Derived soil HSL exceeds soil saturation concentraiton

PS119057

BTEX																									
Ethylbenzene		Xylene (m & p)		Xylene (o)		Xylene (Sum)		1-Methylnaphthalene	1-Methylnaphthalene (filtered)	2-methylnaphthalene	2-methylnaphthalene (filtered)	Acenaphthene	Acenaphthene (filtered)	Acenaphthylene	Acenaphthylene (filtered)	Anthracene	Anthracene (filtered)	Benz(a)anthracene	Benz(a)anthracene (filtered)	Benzo(a) pyrene	Benzo(a) pyrene (filtered)	Benzo(b&j)fluoranthene	Benzo(b&j)fluoranthene (filtered)	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene (filtered)
mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
0.1	0.5	0.2	1	0.1	0.5	0.3	1.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
600						1,000														0.8					
1,080						1,800														10					
	30,000						50,000														40				
2,400						4,000														3.2					
4,320						7,200														23					
	120,000						200,000														160				

<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	<0.5	-	<1	-	<0.5	-	<1.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	0.2	<0.1	0.1	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	-	<0.2	-	<0.1	-	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.1	-	<0.2	-	<0.1	-	<0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

10	**1**	**10**	**1**	**10**	**1**	**10**	**1**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**
ND	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
<0.1	**<0.5**	**<0.2**	**<1**	**<0.1**	**<0.5**	**<0.3**	**<1.5**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**<0.1**	**0.2**	**<0.1**	**0.2**	**<0.1**	**0.1**	**<0.1**
0.05	**0.5**	**0.1**	**1**	**0.05**	**0.5**	**0.15**	**1.5**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
0.05	**0.5**	**0.1**	**1**	**0.05**	**0.5**	**0.15**	**1.5**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**

PAH																										
Benzo(k)fluoranthene	Benzo(k)fluoranthene (filtered)	Chrysene	Chrysene (filtered)	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene (filtered)	Fluoranthene	Fluoranthene (filtered)	Fluorene	Fluorene (filtered)	Indeno(1,2,3-c,d)pyrene	Indeno(1,2,3-c,d)pyrene (filtered)	Naphthalene	Naphthalene (filtered)	Phenanthrene	Phenanthrene (filtered)	PAHs (Sum)	PAHs (Sum) (filtered)	Pyrene	Pyrene (filtered)	Total Positive PAHs	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium
mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/kg	µg/L	mg/kg	µg/L	mg/kg
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	1	0.1	0.1	0.8	1	1	0.3	0.1	0.5
																200					100		20		100[#1]
																200				200	500		100		1,900[#1]
																						5,000		1,000	
																800					400		80		400[#1]
																800				800	2,000		400		7,600[#1]
																						20,000		4,000	
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	9	-	<0.3	-	12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	-	<1	-	<0.1	-
-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	10	-	<0.3	-	13
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	10	-	<0.3	-	21
-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	14	-	0.3	-	12
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	-	<20	-	<1	-
<0.1	<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	<0.8	<1	0.2	<0.1	1.4	9	-	<0.3	-	16
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	10	-	<0.3	-	14
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	-	<20	-	<1	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	9	-	<0.3	-	15
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	6	-	<0.3	-	7.2
-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	8	-	<0.3	-	6.9
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	-	<20	-	<1	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	7	-	<0.3	-	11
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.8	<1	<0.1	<0.1	<0.8	9	-	<0.3	-	12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**10**	**4**	**10**	**4**	**10**
ND	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**6**	**ND**	**ND**	**ND**	**7.2**
<0.1	**<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**	**<0.8**	**<1**	**0.2**	**<0.1**	**1.4**	**10**	**<20**	**<0.3**	**<1**	**21**
0.05	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.4**	**0.5**	**0.05**	**0.05**	**0.4**	**8.6**	**10**	**0.15**	**0.5**	**13**
0.05	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.4**	**0.5**	**0.05**	**0.05**	**0.4**	**9.568**	**10**	**0.15**	**0.5**	**16.12**

Metals											Inorganics	OCP																	
Chromium (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)	Solids Leachate pH (post rolling) (filtered)	2,4-DDT	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (gamma)	Chlordane (cis)	d-BHC	DDD	DDT	Dieldrin	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde
µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	pH Units	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	µg/kg
1	0.5	1	1	1	0.05	0.1	0.5	1	2	5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	100	0.2	0.2	0.1	0.2	100
			100		4		40																	60[#2]	60[#2]	60[#2]		
			1,500		50		1,050																	108[#2]	108[#2]	108[#2]		
5,000[#1]				5,000		200		2,000																				
			400		16		160																	240[#2]	240[#2]	240[#2]		
			6,000		200		4,200																	432[#2]	432[#2]	432[#3]		
20,000[#1]				20,000		800		8,000																				

-	24	-	120	-	0.15	-	6.2	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<1	-	<1	-	<1	-	<0.1	-	<1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	40	-	170	-	0.07	-	6.8	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	29	-	370	30	0.08	-	14	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	15	-	200	-	0.06	-	4.7	-	160	-	4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<100	<0.2	<0.2	<0.1	<0.2	<100
<5	-	<5	-	30	-	<0.1	-	<5	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	29	-	120	-	0.11	-	11	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	12	-	47	-	<0.05	-	4.1	-	43	-	4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<100	<0.2	<0.2	<0.1	<0.2	<100
<5	-	<5	-	30	-	<0.1	-	6	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	16	-	65	-	<0.05	-	7.8	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	15	-	30	-	0.45	-	12	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	14	-	55	-	<0.05	-	4.5	-	77	-	4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<100	<0.2	<0.2	<0.1	<0.2	<100
<5	-	<5	-	<20	-	<0.1	-	<5	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	23	-	59	-	0.11	-	7.0	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	27	-	120	-	0.07	-	7.0	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

4	**10**	**4**	**10**	**4**	**10**	**4**	**10**	**4**	**10**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
ND	**15**	**ND**	**30**	**ND**	**0.07**	**ND**	**6.2**	**ND**	**42**	**ND**	**4.9**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
<5	**40**	**<5**	**370**	**30**	**0.45**	**<0.1**	**14**	**6**	**400**	**300**	**4.9**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.2**	**<100**	**<0.2**	**<0.2**	**<0.1**	**<0.2**	**<100**
2.5	**25**	**2.5**	**132**	**13**	**0.13**	**0.05**	**9**	**3.7**	**159**	**233**	**4.9**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.1**	**50**	**0.1**	**0.1**	**0.05**	**0.1**	**50**
2.5	**30.72**	**2.5**	**202.8**	**18.41**	**0.222**	**0.05**	**10.94**	**7.073**	**236.5**	**351.7**	**4.9**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.1**	**50**	**0.1**	**0.1**	**0.05**	**0.1**	**50**

								OPP													PCB									
g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Isodrin	Methoxychlor	Mirex	trans-Nonachlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Methidathion	o,p'-DDD	o,p'-DDE	Parathion	Arochlor 1016	Arochlor 1232	Arochlor 1268	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Aroclor 1262	Aroclor 1221	PCBs (Sum of total)
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
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.5	0.5	0.2	0.2	0.2	0.5	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1
										4																				50
										7.5																				50
										16																				50
										30																				< 50

-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.25	0.25	0.25	0.1	0.1	0.1	0.25	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.25	0.25	0.25	0.1	0.1	0.1	0.25	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5

			Asbestos Classification		Asbestos													
			Asbestos (Fines and Fibrous FA+AF)		ACM - Comment	AF - Comment	Asbestos Reported Result	FA- Comment	Mass ACM	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Mass Asbestos in ACM (15%)	Mass Asbestos in FA	Mass FA	Approximate Sample Mass	Asbestos from ACM in Soil	Horizon
			% (w/w)	%w/w	Comment	Comment	Comment	Comment	kg	g	g	g	g	g	g	g	%w/w	Comment
	EQL																	
	FA and AF (friable asbestos)		0.001	0.001														
	HSLs Residential A																0.01	
	HSLs Residential B																0.04	
	HSLs Comm/Ind D Asbestos																0.05	
	Field ID	**Date**																
BLOCK H	**TP1_0.1**	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	549	0.0000	Fill
	TP1_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	590	0.0000	Fill
	TP1_0.2_FR	**02-04-20**	0.0000	-	Nil	Nil	Fibre cement sheet - Chrysotile	-	**0.002**	0.0000	0.0000	0.0000	**0.030**	0.0000	0.0000	-	**0.0019**	Fill
	TP1_0.3	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	536	0.0000	Clay
	TP2_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	625	0.0000	Fill
	TP2_0.3	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	608	0.0000	Clay
	TP3_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	610	0.0000	Fill
	TP3_0.2_FR	**02-04-20**	0.0000	-	Nil	Nil	Fibre cement sheet - Chrysotile	-	**0.014**	0.0000	0.0000	0.0000	**0.210**	0.0000	0.0000	-	**0.0131**	Fill
	TP4_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	574	0.0000	Fill
	TP4_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	581	0.0000	Clay
	TP5_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	569	0.0000	Fill
	TP5_01_FR	**02-04-20**	0.0000	-	Nil	Nil	Fibre cement sheet - Chrysotile	-	**0.012**	0.0000	0.0000	0.0000	**0.180**	0.0000	0.0000	-	**0.0113**	Fill
	TP5_0.3	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	618	0.0000	Fill
	TP5_0.4	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic Fibre detcted	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	565	0.0000	Clay
	TP6_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	696	0.0000	Fill
	TP7_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	658	0.0000	Fill
	TP7_0.1	**02-04-20**	0.0000	-	Nil	Nil	Chrysotile; amosite and crocidolite asbestos detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	17	0.0000	
	TP7_0.1_FR	**02-04-20**	0.0000	-	Nil	Nil	Fibre cement sheet - Chrysotile	-	**0.02**	0.0000	0.0000	0.0000	**0.300**	0.0000	0.0000	-	**0.0188**	Fill
	TP7_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	437	0.0000	Clay
	TP8_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	629	0.0000	Fill
	TP9_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	606	0.0000	Fill
	TP9_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	724	0.0000	Clay
	TP10_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	693	0.0000	Fill
	TP11_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	462	0.0000	Fill
	TP11_0.2	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	409	0.0000	Clay
	TP12_0.1	**02-04-20**	0.0000	-	Nil	Nil	NAD. Organic fibre detected	Nil	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	520	0.0000	Fill

ATTACHMENT D
LABORATORY CERTIFICATES

SAMPLE RECEIPT ADVICE

SE204666

CLIENT DETAILS

Contact	Hamish Donovan
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, Ernst & Young Centre 680 George St NSW 2000
Telephone	02 9272 1453
Facsimile	02 9272 5101
Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	11

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	Wed 1/4/2020
Report Due	Fri 3/4/2020
SGS Reference	**SE204666**

SUBMISSION DETAILS

This is to confirm that 11 samples were received on Wednesday 1/4/2020. Results are expected to be ready by COB Friday 3/4/2020. Please quote SGS reference SE204666 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	10 Soil, 1 Water
Date documentation received	1/4/2020@6:12pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	21°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

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

17 samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE204666

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP1_0.1	1	26	7	10	11	7
002	TP2_0.2	1	26	7	10	11	7
003	TP4_0.2	1	26	7	10	11	7
004	TP7_0.1	1	26	7	10	11	7
005	TP9_0.1	1	26	7	10	11	7
006	TP11_0.1	1	26	7	10	11	7
007	TP12_0.1	1	26	7	10	11	7
008	QA01	1	26	7	10	11	7
009	TB010420	-	-	-	-	11	7
010	TS010420	-	-	-	-	11	-

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

SE204666

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in Water	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	TP1_0.1	1	-	-	-	-
002	TP2_0.2	1	-	-	-	-
003	TP4_0.2	1	-	-	-	-
004	TP7_0.1	1	-	-	-	-
005	TP9_0.1	1	-	-	-	-
006	TP11_0.1	1	-	-	-	-
007	TP12_0.1	1	-	-	-	-
008	QA01	1	-	-	-	-
011	RN010420	-	22	9	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

SE204666

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS
011	RN010420	1	7

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 .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Hamish Donovan
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, Ernst & Young Centre 680 George St NSW 2000
Telephone	02 9272 1453
Facsimile	02 9272 5101
Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	11

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	**SE204666 R0**
Date Received	1/4/2020
Date Reported	6/4/2020

COMMENTS

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

SIGNATORIES

Bennet LO
Senior Organic Chemist/Metals Chemist

Dong LIANG
Metals/Inorganics Team Leader

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

VOC's in Soil [AN433] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008	TB010420 SOIL - 1/4/2020 SE204666.009	TS010420 SOIL - 1/4/2020 SE204666.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[89%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[95%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[98%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	[98%]
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[98%]
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	-
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008	TB010420 SOIL - 1/4/2020 SE204666.009
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	**59**	<45	**69**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008	TB010420 SOIL - 1/4/2020 SE204666.009
TRH C10-C14	mg/kg	20	<20	<20	<20	-
TRH C15-C28	mg/kg	45	**51**	<45	<45	-
TRH C29-C36	mg/kg	45	**67**	<45	<45	-
TRH C37-C40	mg/kg	100	<100	<100	<100	-
TRH >C10-C16	mg/kg	25	<25	<25	<25	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	-
TRH >C16-C34 (F3)	mg/kg	90	**100**	<90	<90	-
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	-
TRH C10-C36 Total	mg/kg	110	**120**	<110	<110	-
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	-

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	0.3	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	1.4	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	1.4	<0.8	<0.8

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
Arsenic, As	mg/kg	1	10	10	9	9	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	13	21	16	15	7.2
Copper, Cu	mg/kg	0.5	40	29	29	16	15
Lead, Pb	mg/kg	1	170	370	120	65	30
Nickel, Ni	mg/kg	0.5	6.8	14	11	7.8	12
Zinc, Zn	mg/kg	2	150	400	230	42	42

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008
Arsenic, As	mg/kg	1	7	9	9
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	11	12	12
Copper, Cu	mg/kg	0.5	23	27	24
Lead, Pb	mg/kg	1	59	120	120
Nickel, Ni	mg/kg	0.5	7.0	7.0	6.2
Zinc, Zn	mg/kg	2	110	150	150

Mercury in Soil [AN312] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
Mercury	mg/kg	0.05	**0.07**	**0.08**	**0.11**	<0.05	**0.45**

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008
Mercury	mg/kg	0.05	**0.11**	**0.07**	**0.15**

Moisture Content [AN002] Tested: 1/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666.001	TP2_0.2 SOIL - 1/4/2020 SE204666.002	TP4_0.2 SOIL - 1/4/2020 SE204666.003	TP7_0.1 SOIL - 1/4/2020 SE204666.004	TP9_0.1 SOIL - 1/4/2020 SE204666.005
% Moisture	%w/w	1	15.5	11.9	12.9	16.5	16.3

PARAMETER	UOM	LOR	TP11_0.1 SOIL - 1/4/2020 SE204666.006	TP12_0.1 SOIL - 1/4/2020 SE204666.007	QA01 SOIL - 1/4/2020 SE204666.008
% Moisture	%w/w	1	27.2	20.0	16.0

VOCs in Water [AN433] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C40	µg/L	320	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Total PAH (18)	µg/L	1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 2/4/2020

PARAMETER	UOM	LOR	RN010420 WATER - 1/4/2020 SE204666.011
Mercury	mg/L	0.0001	<0.0001

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.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
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.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
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
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
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	Carcinogenic PAHs may be expressed as Benzo(a)pyrene equivalents by applying the BaP toxicity equivalence factor (NEPM 1999, June 2013, B7). These can be reported as the individual PAHs and as a sum of carcinogenic PAHs. The sum is reported three ways, the first assuming all <LOR results are zero, the second assuming all < LOR results are half the LOR and the third assuming all <LOR results are the LOR.
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

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

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:

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

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

The QC 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

SE204666 R0

CLIENT DETAILS

Contact	Hamish Donovan
Client	WSP AUSTRALIA PTY LIMITED
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Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	11

LABORATORY DETAILS

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Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
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SGS Reference	**SE204666 R0**
Date Received	01 Apr 2020
Date Reported	06 Apr 2020

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:

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

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	10 Soil, 1 Water
Date documentation received	1/4/2020@6:12pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	21°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

HOLDING TIME SUMMARY

SE204666 R0

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

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

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

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196515	01 Apr 2020	01 Apr 2020	29 Apr 2020	02 Apr 2020	29 Apr 2020	02 Apr 2020

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1_0.1	SE204666.001	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020
QA01	SE204666.008	LB196492	01 Apr 2020	01 Apr 2020	29 Apr 2020	01 Apr 2020	29 Apr 2020	03 Apr 2020

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1_0.1	SE204666.001	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020
QA01	SE204666.008	LB196485	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	06 Apr 2020	03 Apr 2020

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
TP1_0.1	SE204666.001	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	06 Apr 2020
TP11_0.1	SE204666.006	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	06 Apr 2020
TP12_0.1	SE204666.007	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	06 Apr 2020
QA01	SE204666.008	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	06 Apr 2020
TB010420	SE204666.009	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	06 Apr 2020

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196530	01 Apr 2020	01 Apr 2020	08 Apr 2020	02 Apr 2020	12 May 2020	03 Apr 2020

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
TP1_0.1	SE204666.001	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020
QA01	SE204666.008	LB196491	01 Apr 2020	01 Apr 2020	28 Sep 2020	01 Apr 2020	28 Sep 2020	03 Apr 2020

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196551	01 Apr 2020	01 Apr 2020	28 Sep 2020	02 Apr 2020	28 Sep 2020	02 Apr 2020

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
TP1_0.1	SE204666.001	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020

HOLDING TIME SUMMARY

SE204666 R0

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP7_0.1	SE204666.004	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
QA01	SE204666.008	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TB010420	SE204666.009	LB196487	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196530	01 Apr 2020	01 Apr 2020	08 Apr 2020	02 Apr 2020	12 May 2020	03 Apr 2020

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1_0.1	SE204666.001	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
QA01	SE204666.008	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TB010420	SE204666.009	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TS010420	SE204666.010	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196534	01 Apr 2020	01 Apr 2020	08 Apr 2020	02 Apr 2020	12 May 2020	03 Apr 2020

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1_0.1	SE204666.001	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP2_0.2	SE204666.002	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP4_0.2	SE204666.003	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP7_0.1	SE204666.004	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP9_0.1	SE204666.005	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP11_0.1	SE204666.006	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TP12_0.1	SE204666.007	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
QA01	SE204666.008	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TB010420	SE204666.009	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020
TS010420	SE204666.010	LB196486	01 Apr 2020	01 Apr 2020	15 Apr 2020	01 Apr 2020	11 May 2020	03 Apr 2020

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RN010420	SE204666.011	LB196534	01 Apr 2020	01 Apr 2020	08 Apr 2020	02 Apr 2020	12 May 2020	03 Apr 2020

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	TP1_0.1	SE204666.001	%	70 - 130%	70
	TP2_0.2	SE204666.002	%	70 - 130%	82
	TP4_0.2	SE204666.003	%	70 - 130%	102
	TP7_0.1	SE204666.004	%	70 - 130%	104
	TP9_0.1	SE204666.005	%	70 - 130%	74
	TP11_0.1	SE204666.006	%	70 - 130%	96
	TP12_0.1	SE204666.007	%	70 - 130%	80
	QA01	SE204666.008	%	70 - 130%	80
d14-p-terphenyl (Surrogate)	TP1_0.1	SE204666.001	%	70 - 130%	78
	TP2_0.2	SE204666.002	%	70 - 130%	80
	TP4_0.2	SE204666.003	%	70 - 130%	100
	TP7_0.1	SE204666.004	%	70 - 130%	110
	TP9_0.1	SE204666.005	%	70 - 130%	78
	TP11_0.1	SE204666.006	%	70 - 130%	90
	TP12_0.1	SE204666.007	%	70 - 130%	76
	QA01	SE204666.008	%	70 - 130%	76
d5-nitrobenzene (Surrogate)	TP1_0.1	SE204666.001	%	70 - 130%	72
	TP2_0.2	SE204666.002	%	70 - 130%	76
	TP4_0.2	SE204666.003	%	70 - 130%	90
	TP7_0.1	SE204666.004	%	70 - 130%	96
	TP9_0.1	SE204666.005	%	70 - 130%	74
	TP11_0.1	SE204666.006	%	70 - 130%	84
	TP12_0.1	SE204666.007	%	70 - 130%	78
	QA01	SE204666.008	%	70 - 130%	72

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	RN010420	SE204666.011	%	40 - 130%	56
d14-p-terphenyl (Surrogate)	RN010420	SE204666.011	%	40 - 130%	80
d5-nitrobenzene (Surrogate)	RN010420	SE204666.011	%	40 - 130%	44

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	97
	TP2_0.2	SE204666.002	%	60 - 130%	95
	TP4_0.2	SE204666.003	%	60 - 130%	89
	TP7_0.1	SE204666.004	%	60 - 130%	96
	TP9_0.1	SE204666.005	%	60 - 130%	89
	TP11_0.1	SE204666.006	%	60 - 130%	86
	TP12_0.1	SE204666.007	%	60 - 130%	93
	QA01	SE204666.008	%	60 - 130%	90
	TB010420	SE204666.009	%	60 - 130%	99
	TS010420	SE204666.010	%	60 - 130%	94
d4-1,2-dichloroethane (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	92
	TP2_0.2	SE204666.002	%	60 - 130%	91
	TP4_0.2	SE204666.003	%	60 - 130%	103
	TP7_0.1	SE204666.004	%	60 - 130%	111
	TP9_0.1	SE204666.005	%	60 - 130%	102
	TP11_0.1	SE204666.006	%	60 - 130%	84
	TP12_0.1	SE204666.007	%	60 - 130%	89
	QA01	SE204666.008	%	60 - 130%	105
	TB010420	SE204666.009	%	60 - 130%	116
	TS010420	SE204666.010	%	60 - 130%	108
d8-toluene (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	108
	TP2_0.2	SE204666.002	%	60 - 130%	106
	TP4_0.2	SE204666.003	%	60 - 130%	100
	TP7_0.1	SE204666.004	%	60 - 130%	108
	TP9_0.1	SE204666.005	%	60 - 130%	98
	TP11_0.1	SE204666.006	%	60 - 130%	96
	TP12_0.1	SE204666.007	%	60 - 130%	102
	QA01	SE204666.008	%	60 - 130%	102
	TB010420	SE204666.009	%	60 - 130%	114

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	TS010420	SE204666.010	%	60 - 130%	107

VOCs in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RN010420	SE204666.011	%	40 - 130%	105
d4-1,2-dichloroethane (Surrogate)	RN010420	SE204666.011	%	40 - 130%	96
d8-toluene (Surrogate)	RN010420	SE204666.011	%	40 - 130%	100

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	97
	TP2_0.2	SE204666.002	%	60 - 130%	95
	TP4_0.2	SE204666.003	%	60 - 130%	89
	TP7_0.1	SE204666.004	%	60 - 130%	96
	TP9_0.1	SE204666.005	%	60 - 130%	89
	TP11_0.1	SE204666.006	%	60 - 130%	86
	TP12_0.1	SE204666.007	%	60 - 130%	93
	QA01	SE204666.008	%	60 - 130%	90
	TB010420	SE204666.009	%	60 - 130%	99
d4-1,2-dichloroethane (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	92
	TP2_0.2	SE204666.002	%	60 - 130%	91
	TP4_0.2	SE204666.003	%	60 - 130%	103
	TP7_0.1	SE204666.004	%	60 - 130%	111
	TP9_0.1	SE204666.005	%	60 - 130%	102
	TP11_0.1	SE204666.006	%	60 - 130%	84
	TP12_0.1	SE204666.007	%	60 - 130%	89
	QA01	SE204666.008	%	60 - 130%	105
	TB010420	SE204666.009	%	60 - 130%	116
d8-toluene (Surrogate)	TP1_0.1	SE204666.001	%	60 - 130%	108
	TP2_0.2	SE204666.002	%	60 - 130%	106
	TP4_0.2	SE204666.003	%	60 - 130%	100
	TP7_0.1	SE204666.004	%	60 - 130%	108
	TP9_0.1	SE204666.005	%	60 - 130%	98
	TP11_0.1	SE204666.006	%	60 - 130%	96
	TP12_0.1	SE204666.007	%	60 - 130%	102
	QA01	SE204666.008	%	60 - 130%	102
	TB010420	SE204666.009	%	60 - 130%	114

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RN010420	SE204666.011	%	40 - 130%	105
d4-1,2-dichloroethane (Surrogate)	RN010420	SE204666.011	%	60 - 130%	96
d8-toluene (Surrogate)	RN010420	SE204666.011	%	40 - 130%	100

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

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

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB196515.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB196492.001	Mercury	mg/kg	0.05	<0.05

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB196487.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	72
		2-fluorobiphenyl (Surrogate)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	76

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB196530.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	62
		2-fluorobiphenyl (Surrogate)	%	-	66
		d14-p-terphenyl (Surrogate)	%	-	94

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

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

Sample Number	Parameter	Units	LOR	Result
LB196491.001	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

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.

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

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

Sample Number	Parameter	Units	LOR	Result
LB196491.001	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB196551.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB196487.001	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

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB196530.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB196486.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	124
		d8-toluene (Surrogate)	%	-	121
		Bromofluorobenzene (Surrogate)	%	-	106
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB196534.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	97
		Bromofluorobenzene (Surrogate)	%	-	84

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB196486.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	124

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB196534.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	97
		Bromofluorobenzene (Surrogate)	%	-	84

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

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

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

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

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.011	LB196515.011	Mercury	µg/L	0.0001	<0.0001	0.0000	200	58

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204665.002	LB196492.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE204665.005	LB196492.018	Mercury	mg/kg	0.05	<0.05	<0.05	137	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.005	LB196485.011	% Moisture	%w/w	1	16.3	16.4	36	0
SE204666.008	LB196485.015	% Moisture	%w/w	1	16.0	15.1	36	6

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.008	LB196487.021		Naphthalene	mg/kg	0.1	<0.1	0	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0	200	0
			Anthracene	mg/kg	0.1	<0.1	0	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0	200	0
			Pyrene	mg/kg	0.1	<0.1	0	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0	200	0
			Chrysene	mg/kg	0.1	<0.1	0	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.38	30	5
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.39	30	3

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204665.002	LB196491.014	Arsenic, As	mg/kg	1	9	10	41	11
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	13	11	34	15
		Copper, Cu	mg/kg	0.5	7.6	8.3	36	9
		Nickel, Ni	mg/kg	0.5	3.3	3.2	45	4
		Lead, Pb	mg/kg	1	19	19	35	1
		Zinc, Zn	mg/kg	2	14	16	43	12
SE204665.005	LB196491.018	Arsenic, As	mg/kg	1	10	11	40	14
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	21	17	33	20
		Copper, Cu	mg/kg	0.5	25	22	32	13
		Nickel, Ni	mg/kg	0.5	3.9	3.9	43	1
		Lead, Pb	mg/kg	1	27	24	34	13
		Zinc, Zn	mg/kg	2	27	27	37	1

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

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

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

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

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.011	LB196551.006		Arsenic, As	µg/L	1	<1	<1	200	0
			Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
			Chromium, Cr	µg/L	1	<1	<1	200	0
			Copper, Cu	µg/L	1	<1	<1	200	0
			Lead, Pb	µg/L	1	<1	<1	200	0
			Nickel, Ni	µg/L	1	<1	<1	200	0
			Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.005	LB196487.014		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	69	79	91	14
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	179	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	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	91	141	1
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE204666.008	LB196487.021		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.005	LB196486.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.2	9.6	50	6
			d8-toluene (Surrogate)	mg/kg	-	9.8	10.4	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	9.4	50	5
		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
SE204666.008	LB196486.021	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	0	200	0
			Toluene	mg/kg	0.1	<0.1	0.0106721379	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	0.0046793879	200	0
			m/p-xylene	mg/kg	0.2	<0.2	0.0071275236	200	0
			o-xylene	mg/kg	0.1	<0.1	0.0016090560	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0.0016950719	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.5	10.5113311536	50	0
			d8-toluene (Surrogate)	mg/kg	-	10.2	10.1779504130	50	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	8.9474920710	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	0.0087365796	200	0
			Total BTEX	mg/kg	0.6	<0.6	0	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.005	LB196486.014		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	-	10.2	9.6	30	6
			d8-toluene (Surrogate)	mg/kg	-	9.8	10.4	30	5

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

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

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

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

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204666.005	LB196486.014	Surrogates	Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	9.4	30	5
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE204666.008	LB196486.021		TRH C6-C10	mg/kg	25	<25	0	200	0
			TRH C6-C9	mg/kg	20	<20	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.5	10.511331153	30	0
			d8-toluene (Surrogate)	mg/kg	-	10.2	10.177950413	30	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	8.9474920710	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	0	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE204548.001	LB196534.018		TRH C6-C10	µg/L	50	0	0	200	0
			TRH C6-C9	µg/L	40	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.58467065179	9.4128756332	30	2
			d8-toluene (Surrogate)	µg/L	-	9.85074930049	9.4756674415	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	9.96232965759	9.9254556963	30	0
		VPH F Bands	Benzene (F0)	µg/L	0.5	0	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	0	0	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196492.002	Mercury	mg/kg	0.05	0.18	0.2	70 - 130	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196487.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	110
		Acenaphthylene	mg/kg	0.1	4.4	4	60 - 140	109
		Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	108
		Phenanthrene	mg/kg	0.1	4.4	4	60 - 140	109
		Anthracene	mg/kg	0.1	4.5	4	60 - 140	112
		Fluoranthene	mg/kg	0.1	4.1	4	60 - 140	103
		Pyrene	mg/kg	0.1	4.5	4	60 - 140	113
		Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	119
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	70
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	74
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	72

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196530.002		Naphthalene	µg/L	0.1	28	40	60 - 140	69
		Acenaphthylene	µg/L	0.1	36	40	60 - 140	89
		Acenaphthene	µg/L	0.1	33	40	60 - 140	82
		Phenanthrene	µg/L	0.1	37	40	60 - 140	92
		Anthracene	µg/L	0.1	31	40	60 - 140	76
		Fluoranthene	µg/L	0.1	34	40	60 - 140	84
		Pyrene	µg/L	0.1	34	40	60 - 140	85
		Benzo(a)pyrene	µg/L	0.1	35	40	60 - 140	86
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	62
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	72
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	72

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 %
LB196491.002	Arsenic, As	mg/kg	1	350	318.22	80 - 120	109
	Cadmium, Cd	mg/kg	0.3	5.3	5.41	80 - 120	98
	Chromium, Cr	mg/kg	0.5	37	38.31	80 - 120	97
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	106
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	99
	Lead, Pb	mg/kg	1	98	89.9	80 - 120	109
	Zinc, Zn	mg/kg	2	280	273	80 - 120	103

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196551.002	Arsenic, As	µg/L	1	18	20	80 - 120	88
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	94
	Chromium, Cr	µg/L	1	20	20	80 - 120	99
	Copper, Cu	µg/L	1	19	20	80 - 120	97
	Lead, Pb	µg/L	1	18	20	80 - 120	88
	Nickel, Ni	µg/L	1	19	20	80 - 120	97
	Zinc, Zn	µg/L	5	19	20	80 - 120	96

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196487.002		TRH C10-C14	mg/kg	20	30	40	60 - 140	75
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	78
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	73
	TRH F Bands	TRH >C10-C16	mg/kg	25	30	40	60 - 140	75
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	78
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR

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.

TRH (Total Recoverable Hydrocarbons) in Water (continued) — Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196530.002		TRH C10-C14	µg/L	50	750	1200	60 - 140	63
		TRH C15-C28	µg/L	200	1300	1200	60 - 140	107
		TRH C29-C36	µg/L	200	1300	1200	60 - 140	104
	TRH F Bands	TRH >C10-C16	µg/L	60	960	1200	60 - 140	80
		TRH >C16-C34 (F3)	µg/L	500	1400	1200	60 - 140	119
		TRH >C34-C40 (F4)	µg/L	500	600	600	60 - 140	100

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196486.002	Monocyclic	Benzene	mg/kg	0.1	4.3	5	60 - 140	86
	Aromatic	Toluene	mg/kg	0.1	4.4	5	60 - 140	89
		Ethylbenzene	mg/kg	0.1	4.4	5	60 - 140	88
		m/p-xylene	mg/kg	0.2	8.8	10	60 - 140	88
		o-xylene	mg/kg	0.1	4.4	5	60 - 140	88
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
		d8-toluene (Surrogate)	mg/kg	-	11.3	10	70 - 130	113
		Bromofluorobenzene (Surrogate)	mg/kg	-	10.5	10	70 - 130	105

VOCs in Water — Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196534.002	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic	Toluene	µg/L	0.5	52	45.45	60 - 140	114
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	51	45.45	60 - 140	111
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.7	10	60 - 140	97
		d8-toluene (Surrogate)	µg/L	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	µg/L	-	10.7	10	70 - 130	107

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196486.002		TRH C6-C10	mg/kg	25	96	92.5	60 - 140	104
		TRH C6-C9	mg/kg	20	85	80	60 - 140	106
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	mg/kg	-	10.5	10	70 - 130	105
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	70	62.5	60 - 140	111

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB196534.002		TRH C6-C10	µg/L	50	750	946.63	60 - 140	79
		TRH C6-C9	µg/L	40	690	818.71	60 - 140	84
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.7	10	60 - 140	97
		d8-toluene (Surrogate)	µg/L	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	µg/L	-	10.7	10	70 - 130	107
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	440	639.67	60 - 140	69

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

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

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204666.001	LB196492.004	Mercury	mg/kg	0.05	0.23	0.07	0.2	78

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204665.003	LB196487.020	Naphthalene	mg/kg	0.1	4.3	<0.1	4	109
		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	4.4	<0.1	4	110
		Acenaphthene	mg/kg	0.1	4.6	<0.1	4	114
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.3	<0.1	4	107
		Anthracene	mg/kg	0.1	4.6	<0.1	4	114
		Fluoranthene	mg/kg	0.1	4.2	<0.1	4	103
		Pyrene	mg/kg	0.1	4.5	<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	4.9	<0.1	4	121
		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	4.9	<0.2	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	5.1	<0.3	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	5.0	<0.2	-	-
		Total PAH (18)	mg/kg	0.8	36	<0.8	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	74
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	72
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	74

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%
SE204666.001	LB196491.004	Arsenic, As	mg/kg	1	52	10	50	84
		Cadmium, Cd	mg/kg	0.3	45	<0.3	50	90
		Chromium, Cr	mg/kg	0.5	57	13	50	88
		Copper, Cu	mg/kg	0.5	160	40	50	249 ④
		Nickel, Ni	mg/kg	0.5	51	6.8	50	88
		Lead, Pb	mg/kg	1	180	170	50	32 ④
		Zinc, Zn	mg/kg	2	190	150	50	70

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204642.001	LB196551.004	Arsenic, As	µg/L	1	21	<1	20	102
		Cadmium, Cd	µg/L	0.1	19	<0.1	20	96
		Chromium, Cr	µg/L	1	20	<1	20	96
		Copper, Cu	µg/L	1	25	7	20	90
		Lead, Pb	µg/L	1	17	<1	20	85
		Nickel, Ni	µg/L	1	21	3	20	90
		Zinc, Zn	µg/L	5	28	10	20	91

TRH (Total Recoverable Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204665.003	LB196487.020	TRH C10-C14	mg/kg	20	38	<20	40	95
		TRH C15-C28	mg/kg	45	45	<45	40	113
		TRH C29-C36	mg/kg	45	<45	<45	40	88
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
		TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
	TRH F Bands	TRH >C10-C16	mg/kg	25	39	<25	40	98
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	39	<25	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204665.003	LB196487.020	TRH F Bands	TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	110
			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%
SE204665.001	LB196486.004	Monocyclic	Benzene	mg/kg	0.1	3.3	<0.1	5	65
		Aromatic	Toluene	mg/kg	0.1	3.4	<0.1	5	68
			Ethylbenzene	mg/kg	0.1	3.5	<0.1	5	69
			m/p-xylene	mg/kg	0.2	7.0	<0.2	10	69
			o-xylene	mg/kg	0.1	3.5	<0.1	5	70
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.1	11.1	10	111
			d8-toluene (Surrogate)	mg/kg	-	10.6	10.7	10	106
			Bromofluorobenzene (Surrogate)	mg/kg	-	10.0	10.0	10	100
		Totals	Total Xylenes	mg/kg	0.3	10	<0.3	-	-
			Total BTEX	mg/kg	0.6	21	<0.6	-	-

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE204557.003	LB196534.019	Monocyclic	Benzene	µg/L	0.5	0.15898390346	45.45	112
		Aromatic	Toluene	µg/L	0.5	0.03036023899	45.45	112
			Ethylbenzene	µg/L	0.5	0.04164783636	45.45	113
			m/p-xylene	µg/L	1	0.04701818150	90.9	112
			o-xylene	µg/L	0.5	0.01540887197	45.45	116
		Polycyclic	Naphthalene	µg/L	0.5	0.16159051650	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.82820712225	-	103
			d8-toluene (Surrogate)	µg/L	-	10.0366231816	-	104
			Bromofluorobenzene (Surrogate)	µg/L	-	10.3677090475	-	103

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE204665.001	LB196486.004		TRH C6-C10	mg/kg	25	69	<25	92.5	74
			TRH C6-C9	mg/kg	20	63	<20	80	78
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.1	11.1	10	111
			d8-toluene (Surrogate)	mg/kg	-	10.6	10.7	10	106
			Bromofluorobenzene (Surrogate)	mg/kg	-	10.0	10.0	-	100
		VPH F	Benzene (F0)	mg/kg	0.1	3.3	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	48	<25	62.5	77

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE204557.003	LB196534.019		TRH C6-C10	µg/L	50	0	946.63	78
			TRH C6-C9	µg/L	40	0	818.71	85
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.82820712225	-	103
			d8-toluene (Surrogate)	µg/L	-	10.0366231816	-	104
			Bromofluorobenzene (Surrogate)	µg/L	-	10.3677090475	-	103
		VPH F	Benzene (F0)	µg/L	0.5	0.15898390346	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	0	639.67	67

MATRIX SPIKE DUPLICATES

SE204666 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: 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.
-	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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SGS E-MAILED 4/4/2020 EP

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Company Name:	WSP	Project Name/No:	PS119057 – Wentworthville PS Block H	
Address:	Level 27, Ernst & Young Centre 680 George Street Sydney NSW 2000	Purchase Order No: Results Required Date: Telephone:	 24 Hour TAT (early on Friday if possible?) D: 0400 359 547	
Contact Name:	Hamish Donovan / Ben Shelton	Email Results to:	Hamish.Donovan@wsp.com, Benjamin.Shelton@wsp.com	
Quotation No:	SY141023-1-IS			

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate) Soil Sample	Water Sample	___FRAGMENT__	NO. OF CONTAINERS	ANALYSIS REQUESTED CL10	Hold	CL5	Additional Report Formats / Notes/Guidelines/LOR/ Special instructions
1	TP1_0.1						X			
	TP1_0.3							X		
2	TP2_0.2						X			
	TP2_0.3							X		
	TP3_0.2							X		
	TP3_0.25							X		
3	TP4_0.2						X			
	TP4_0.4							X		
	TP5_0.1							X		
	TP5_0.4							X		
	TP6_0.1							X		
	TP6_0.2							X		
4	TP7_0.1						X			
	TP7_0.2							X		
	TP8_0.1							X		
	TP8_0.25							X		
5	TP9_0.1						X			
	TP9_0.2							X		

SGS EHS Alexandria Laboratory
SE204666 COC
Received: 01 – Apr – 2020

	TP10_0.1							X											
	TP10_0.2							X											
6	TP11_0.1						X												
	TP11_0.2							X											
7	TP12_0.1						X												
	TP12_0.25							X											
8	QA01						X												
	QA01A						X			Please send to Eurofins – TRH, BTEXN, PAHs, 8 metals									
9	TB010420								X										
10	TS010420								X										
11	RN010420						X												

Relinquished By: / WSP	Date/Time:		Received By:	Date/Time:	1/04 1525
Relinquished By:	Date/Time:		Received By:	Date/Time:	
Samples Intact: Yes / No	Temperature: 21 °C		Sample Security Sealed: *Yes / No*	Hazards: *e.g. may contain Asbestos*	
Comments / Subcontracting details:					

SAMPLE RECEIPT ADVICE

SE204666A

CLIENT DETAILS

Contact	Hamish Donovan
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, Ernst & Young Centre 680 George St NSW 2000
Telephone	02 9272 1453
Facsimile	02 9272 5101
Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	14

LABORATORY DETAILS

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Laboratory	SGS Alexandria Environmental
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Telephone	+61 2 8594 0400
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Email	au.environmental.sydney@sgs.com
Samples Received	Mon 6/4/2020
Report Due	Tue 7/4/2020
SGS Reference	**SE204666A**

SUBMISSION DETAILS

This is to confirm that 14 samples were received on Monday 6/4/2020. Results are expected to be ready by COB Tuesday 7/4/2020. Please quote SGS reference SE204666A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	8 Soil
Date documentation received	6/4/2020@12:50PM	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	21°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

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

SE204666A

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

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
012	TP3_0.2	29	14	26	11	7	10	11	7
013	TP5_0.1	29	14	26	11	7	10	11	7
014	TP10_0.1	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

SE204666A

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Metals in TCLP Extract by ICPOES	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in TCLP	TCLP (Toxicity Characteristic Leaching
001	TP1_0.1	-	1	-	-	-
002	TP2_0.2	-	1	-	-	-
003	TP4_0.2	-	1	-	-	-
007	TP12_0.1	-	1	-	-	-
008	QA01	-	1	-	-	-
012	TP3_0.2	1	7	1	22	6
013	TP5_0.1	1	7	1	22	6
014	TP10_0.1	1	7	1	22	6

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

SE204666A

CLIENT DETAILS

Client WSP AUSTRALIA PTY LIMITED

Project PS119057 - Wentworthville PS Block H

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in TCLP Extract
012	TP3_0.2	1
013	TP5_0.1	1
014	TP10_0.1	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 .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Hamish Donovan
Client	WSP AUSTRALIA PTY LIMITED
Address	Level 27, Ernst & Young Centre 680 George St NSW 2000
Telephone	02 9272 1453
Facsimile	02 9272 5101
Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	14

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	**SE204666A R0**
Date Received	6/4/2020
Date Reported	8/4/2020

COMMENTS

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

SIGNATORIES

Bennet LO
Senior Organic Chemist/Metals Chemist

Huong CRAWFORD
Production Manager

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

VOC's in Soil [AN433] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Arsenic, As	mg/kg	1	14	10	8
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	12	14	6.9
Copper, Cu	mg/kg	0.5	15	12	14
Lead, Pb	mg/kg	1	200	47	55
Nickel, Ni	mg/kg	0.5	4.7	4.1	4.5
Zinc, Zn	mg/kg	2	160	43	77

Mercury in Soil [AN312] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Mercury	mg/kg	0.05	**0.06**	<0.05	<0.05

Moisture Content [AN002] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
% Moisture	%w/w	1	**14.7**	**17.2**	**19.0**

TCLP (Toxicity Characteristic Leaching Procedure) for Organics/SVOC [AN006] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
pH 1:20	pH Units	-	6.1	5.6	5.8
pH 1:20 plus HCL	pH Units	-	1.7	1.7	1.7
Extraction Solution Used	No unit	-	1	1	1
Mass of Sample Used*	g	-	25	25	25
Volume of ExtractionSolution Used*	mL	-	500	500	500
pH TCLP after 18 hours	pH Units	-	4.9	4.9	4.9

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract [AN420] Tested: 7/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1

Metals in TCLP Extract by ICPOES [AN320] Tested: 6/4/2020

PARAMETER	UOM	LOR	TP1_0.1 SOIL - 1/4/2020 SE204666A.001	TP2_0.2 SOIL - 1/4/2020 SE204666A.002	TP4_0.2 SOIL - 1/4/2020 SE204666A.003	TP12_0.1 SOIL - 1/4/2020 SE204666A.007	QA01 SOIL - 1/4/2020 SE204666A.008
Arsenic, As	mg/L	0.02	-	-	-	-	-
Cadmium, Cd	mg/L	0.001	-	-	-	-	-
Chromium, Cr	mg/L	0.005	-	-	-	-	-
Copper, Cu	mg/L	0.005	-	-	-	-	-
Lead, Pb	mg/L	0.02	<0.02	**0.03**	<0.02	<0.02	<0.02
Nickel, Ni	mg/L	0.005	-	-	-	-	-
Zinc, Zn	mg/L	0.01	-	-	-	-	-

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Arsenic, As	mg/L	0.02	<0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	<0.001	<0.001	<0.001
Chromium, Cr	mg/L	0.005	<0.005	<0.005	<0.005
Copper, Cu	mg/L	0.005	<0.005	<0.005	<0.005
Lead, Pb	mg/L	0.02	**0.03**	<0.02	<0.02
Nickel, Ni	mg/L	0.005	<0.005	**0.006**	<0.005
Zinc, Zn	mg/L	0.01	**0.30**	**0.16**	**0.24**

Mercury in TCLP Extract [AN311(Perth) /AN312] Tested: 7/4/2020

PARAMETER	UOM	LOR	TP3_0.2 SOIL - 1/4/2020 SE204666A.012	TP5_0.1 SOIL - 1/4/2020 SE204666A.013	TP10_0.1 SOIL - 1/4/2020 SE204666A.014
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001

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.
AN006	Contaminants of interest in a waste material are leached out of the waste with a selected leaching solution under controlled conditions. The ratio of sample to extraction fluid is 100g to 2L (1 to 20 by mass). The concentration of each contaminant of interest is determined in the leachate by appropriate methods after separation from the sample by filtering. Base on USEPA 1311.
AN006	Extraction Fluid #1: This fluid is made by combining 128.6mL of dilute sodium hydroxide solution and 11.5mL glacial acetic acid with water and diluting to a volume of 2 litres. The pH of this fluid should be 4.93 ± 0.05.
AN006	Extraction Fluid #2: This fluid is made by diluting 5.7mL glacial acetic acid with water to a volume of 1 litre. The pH of this fluid should be 2.88 ± 0.05.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
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.
AN311(Perth) /AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
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
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
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.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

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:

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

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

The QC 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

SE204666A R0

CLIENT DETAILS

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Facsimile	02 9272 5101
Email	Hamish.Donovan@wsp.com
Project	**PS119057 - Wentworthville PS Block H**
Order Number	**PS119057**
Samples	14

LABORATORY DETAILS

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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE204666A R0**
Date Received	06 Apr 2020
Date Reported	08 Apr 2020

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

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	8 Soil
Date documentation received	6/4/2020@12:50PM	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	21°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

HOLDING TIME SUMMARY

SE204666A R0

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

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

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

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196785	01 Apr 2020	06 Apr 2020	29 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196785	01 Apr 2020	06 Apr 2020	29 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196785	01 Apr 2020	06 Apr 2020	29 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020

Mercury in TCLP Extract

Method: ME-(AU)-[ENV]AN311(Perth) /AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196832	01 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020	29 Apr 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196832	01 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020	29 Apr 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196832	01 Apr 2020	06 Apr 2020	29 Apr 2020	07 Apr 2020	29 Apr 2020	07 Apr 2020

Metals in TCLP Extract by ICPOES

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1_0.1	SE204666A.001	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP2_0.2	SE204666A.002	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	08 Apr 2020
TP4_0.2	SE204666A.003	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP12_0.1	SE204666A.007	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
QA01	SE204666A.008	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP3_0.2	SE204666A.012	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196809	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196778	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	11 Apr 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196778	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	11 Apr 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196778	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	11 Apr 2020	07 Apr 2020

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

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
TP3_0.2	SE204666A.012	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196823	01 Apr 2020	06 Apr 2020	22 Apr 2020	07 Apr 2020	17 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196823	01 Apr 2020	06 Apr 2020	22 Apr 2020	07 Apr 2020	17 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196823	01 Apr 2020	06 Apr 2020	22 Apr 2020	07 Apr 2020	17 May 2020	07 Apr 2020

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

TCLP (Toxicity Characteristic Leaching Procedure) for Organics/SVOC

Method: ME-(AU)-[ENV]AN006

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196773	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	15 Apr 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196773	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	15 Apr 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196773	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	15 Apr 2020	07 Apr 2020

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

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

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE204666A R0

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196784	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196784	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196784	01 Apr 2020	06 Apr 2020	28 Sep 2020	06 Apr 2020	28 Sep 2020	07 Apr 2020

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
TP3_0.2	SE204666A.012	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196777	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3_0.2	SE204666A.012	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP5_0.1	SE204666A.013	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020
TP10_0.1	SE204666A.014	LB196776	01 Apr 2020	06 Apr 2020	15 Apr 2020	06 Apr 2020	16 May 2020	07 Apr 2020